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SEVENTH BIENNIAL REPORT

OF THE

STATE BOARD OF HORTICULTURE

OF THE

STATE OF CALIFORNIA,

FOR 1899-1900.

SACRAMENTO:
A. J. JOHNSTON, : : : : : SUPERINTENDENT STATE PRINTING.
1901.

CALIFORNIA STATE BOARD OF HORTICULTURE.

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Commissioner for the Napa District.

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Commissioner for the El Dorado District.

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Commissioner for the State at Large.

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Commissioner for the San Joaquin District.

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Commissioner for the San Francisco District.

W. J. HOTCHKISS……Healdsburg
Commissioner for the Sonoma District.

B. M. LELONG……Secretary and Chief Horticultural Officer

ALEXANDER CRAW……Quarantine Officer and Entomologist

OFFICES:

State Capitol, Sacramento.

Branch Office, Clay Street Dock, San Francisco.

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1898/1900

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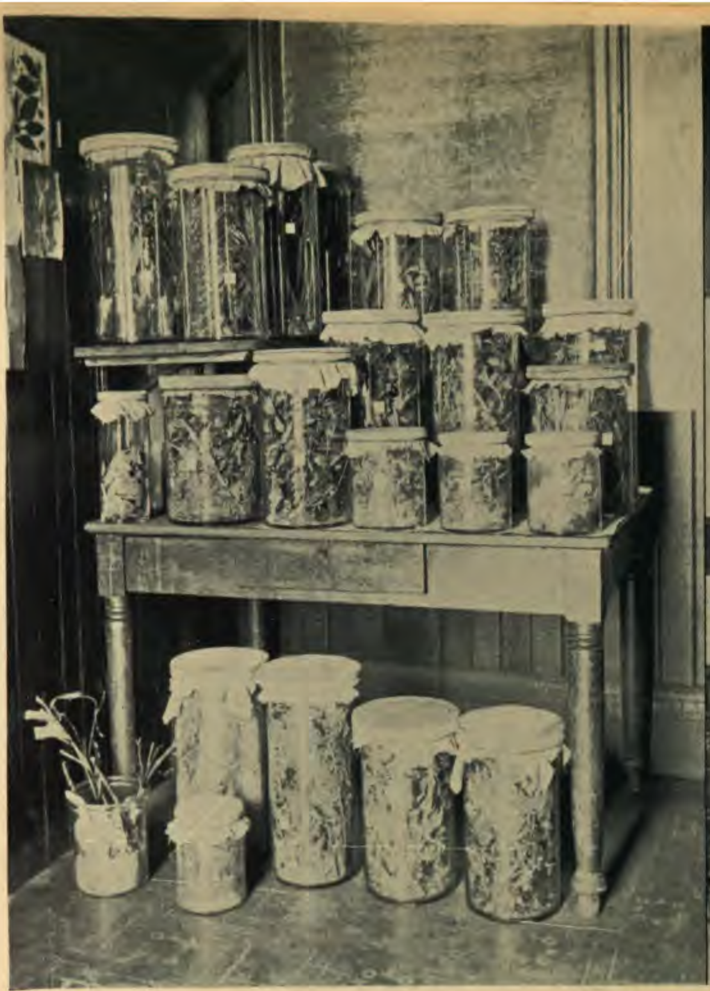
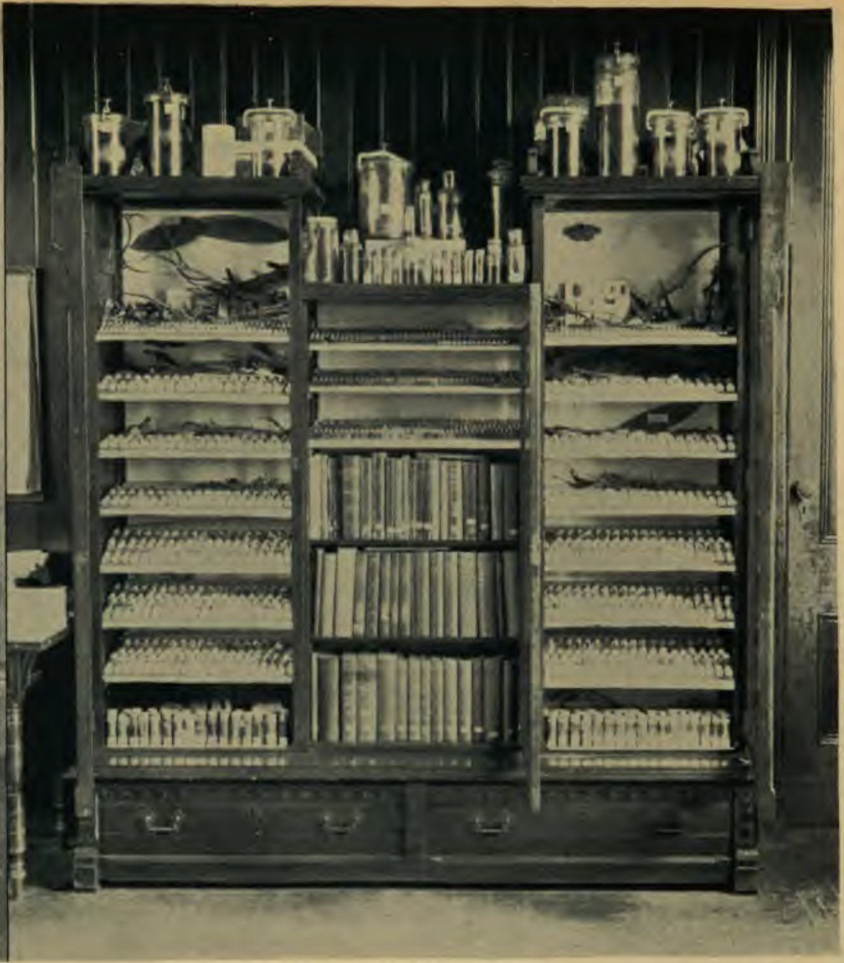


Propagating Beneficial Insects for General Distribution.



Preserved Specimens of Injurious Insect Pests, and Plant Diseases, Taken from Steamers and Sailing Vessels.

REPORT.

OFFICE OF STATE BOARD OF HORTICULTURE,
STATE CAPITOL, SACRAMENTO, CAL., December 31, 1900.

To His Excellency HENRY T. GAGE, *Governor, and the Honorable the Senate and Assembly of California:*

We have the honor to submit herewith this, our biennial report, showing the operations of the State Board of Horticulture for the years 1899–1900.

Respectfully submitted.

ELLWOOD COOPER,
F. H. BUCK,
WM. B. GESTER,
THOS. A. RICE,
H. WEINSTOCK,
BEN M. MADDOX,
A. BLOCK,
W. J. HOTCHKISS,
R. D. STEPHENS,
Commissioners.

Attest:
B. M. LELONG, Secretary.

SUMMARY OF WORK OF THE STATE BOARD OF HORTICULTURE.

The work of the State Board of Horticulture may be divided under the heads "Entomological," "Horticultural Quarantine," "Experimental," "Publications," "Information," "Marketing," "The Introduction of Beneficial Insects," and "Remedies for Plant Pests and Diseases."

In each of these departments active and beneficial work has been done by the Board.

ENTOMOLOGICAL.

From every part of the State insects are constantly being received for determination. Many of them are new species, but generally they are common ones with which the senders are unacquainted. These are all classified, their names and habits given, and, if destructive, the proper methods of checking their increase or reducing their numbers are given; if beneficial, the best methods of protecting and propagating them are furnished. By this means, farmers and fruit-growers are taught to discriminate between friend and foe, to preserve the one and to destroy the other.

HORTICULTURAL QUARANTINE.

This is one of the most important departments of the Board. The greater part of our injurious insects are introduced species. In every section to which an insect is indigenous are found other insects that are parasitic upon it. This is Nature's method of preventing the overwhelming and destructive increase of any species. If, however, these destructive insects are introduced into a section where their natural enemies do not exist, their increase, being unchecked, is alarming and their destructiveness unlimited. Instances of this are seen in the work of the Gypsy Moth in Massachusetts, the spread of *Aspidiotus perniciosus* over a large portion of the Eastern States, and the destructive work of *Icerya purchasi* and other pests introduced into California before the establishment of our Horticultural Quarantine System. Under this system all plants, trees, shrubs, fruits, etc., coming into the State are carefully inspected by competent entomologists, and if found infested with pests not found in the State, they are returned to the point of shipment or destroyed; and if found infested with insects already here, are fumigated. Every foreign vessel arriving in any of our ports is inspected, and all plants coming by rail, or through the mail, have to pass a similar inspection before they can be delivered. This is in accordance with a State law, which makes it a misdemeanor to bring such articles into the State without proper inspection. In connection with this work the Board has received the efficient coöperation of the customs authorities, the railroads, and the United States postal department. It is also in correspondence with the inspectors of horticulture in other States, and by these various means a complete system of quarantine has been established, making it almost impossible to introduce any tree, plant, or fruit into the State without going through a critical inspection. So thorough has been this work that no new pests have obtained a foothold since it was begun, and thousands, any one of which might have proved as serious and destructive as the cottony cushion scale, have been stopped.

INFORMATION BUREAU.

Letters are being constantly received, and personal applications made, asking for information in regard to the best methods of growing, packing, shipping, and marketing the various products of the orchard. Information on every branch of the work, from preparing the seed to serving the finished article on the table, is asked for—as pruning, propagating, cultivating, spraying, thinning, picking, packing, the best varieties for special conditions of soil, climate, etc. This information is always furnished, and when the subject is of sufficient importance, a special bulletin is prepared and issued.

PUBLICATIONS.

As stated above, when a subject is of sufficient importance to warrant it, a bulletin is issued. This is indicated by the large number of letters of inquiry received regarding any particular subject. Among those issued since the last report are “Citrus Culture in California,” “California Olive Industry,” “Insect Pests and Remedies,” “Report of the Twenty-fourth Fruit-Growers' Convention,” and numerous minor bulletins and circulars.

EXPERIMENTAL WORK.

In connection with the Board, extensive experiments have been carried on for the purpose of testing new varieties of fruit and methods of propagation, especially with regard to securing information as to the adaptability of varieties to different conditions of soil and climate.

CHEMICAL EXPERIMENTS.

Very extensive chemical experiments have been made with a view to discovering new remedies for destructive insects or to improving upon old ones. The results of these experiments have been published in the bulletin on “Insect Pests and Remedies,” where the latest approved formulas are given.

REMEDIES. Remedies for the various insect pests have been tested and their efficacy or worthlessness demonstrated. Those that were valuable have been recommended and have passed into general use. In connection with these, preventive measures have been also recommended for keeping pests from obtaining a foothold in non-infested orchards or districts.

PARASITES. Another and a very important work of the Board has been the importation and distribution of parasitic and predaceous insects. Our terrible experience with the "cottony cushion scale," which so nearly killed out the orange industry of the State, led to the study of predaceous insects and the introduction of the *Vedalia cardinalis*, the wonderful work of which has become known the world over. Since then, it has been the effort of this Board to discover and introduce new parasitic and predaceous insects, to reëstablish the natural checks, and to stop as soon as possible the costly and disagreeable system of fumigating and spraying. As stated above, all our most destructive insects are introduced species which in their native lands are kept in check by their natural enemies. It is estimated that the annual damage to agricultural and horticultural interests of the country from the attacks of injurious insects amounts to $300,000,000, and it is safe to say that at a low estimate at least one half of this damage is done by imported insects.

BENEFICIAL INSECTS. The Legislature of 1899 empowered the Board to send an expert entomologist to foreign countries to collect and import into the State beneficial insects for general distribution. George Compere of Los Angeles was appointed, and sailed on July 21st for Australia, making a stop at Honolulu, from which place he collected and forwarded several lots of beneficial insects. Since then he has traveled over a large area of country, visiting the Hawaiian Islands, Fiji, New Zealand, New South Wales, Queensland, Victoria, Java, Tasmania, and Japan, where he has investigated the injurious insects of these sections, and has devoted his time to the discovery of their natural enemies. He has forwarded the following beneficial insects:

Anisorcus affinis, Fabr.
Coccinella arcuata, Fabr.
Coelophora inequalis, Fabr.
Archaionoda tricolor, Fabr.
Verania lineola, Fabr.
Coccinella repanda, Thumb.
Orcus nummeralis, Boisd.
Rhizobius satellus, Blackb.
Rhizobius hirtellus, Crotch.
Coccinella religiosa, Lea.
Coelophora mastersi, Blk.
Scymnus vagans, Blk.
Scymnus notesceus, Blk.
Halyzia mellyi, Muls.

Among the many beneficial insects discovered by Mr. Compere, and which may prove of great benefit to California if they become established, are:

PARASITE OF BLACK SCALE.—Discovered at Brisbane, New South Wales. An internal parasite that attacks the black scale. Placed, on arrival, in glass jars containing plants infested with black scale. As the parasites develop, they are transferred to other jars, and later on will be liberated in orchards, in which, if they establish themselves, it is expected they will keep the scale under control.

GRASSHOPPER PARASITE.—This parasite has been successfully introduced from New South Wales. A large number were liberated in the Livermore Valley, from whence colonies will be distributed. This Board has been endeavoring for several years to secure and introduce this parasite, and it has now succeeded. In New South Wales this insect is known to have parasitized ninety per cent of the female locusts and fifteen per cent of the male.

SOUTH AFRICAN PARASITE OF BLACK SCALE.—Living specimens of *Scutellista cyanea*, an internal parasite of the black scale (*Lecanium oleæ*), have been introduced into the State from South Africa through the aid of our United States Senators, the United States Department of Agriculture, and the Government of Cape Colony, and have become established. The Government Entomologist of Cape Colony, South Africa, says that these parasites keep the black scale in check in that country.

Besides the species here mentioned, many others have been received from Mr. Compere, which are now being cared for in breeding jars, and others have been liberated in orchards. Mr. Compere will return in a few months and will then file a complete report covering the investigation made by him and the results accomplished.

The following synopsis of Mr. Compere's labors indicates the work now being done in this line:

Upon September 15, 1899, Mr. Compere, in company with Mr. Koebele, arrived at Suva, Fiji, and proceeded to investigate the injurious and beneficial insects of the islands. The citrus trees were generally free from scale, the only one found being *Chionaspis citri*, which was found on the trunks only, and did not infect the fruit. Some *Lecanium oleæ* were found on oleander, and these showed the work of internal parasites. A small *Rhizobius* and *Cryptolæmus montrouzieri* were found. A number of beneficial insects were collected here and forwarded to San Francisco.

On November 21, 1899, Mr. Compere arrived at Auckland from Fiji, and forwarded, by the steamer "Mariposa," a large number of ladybirds. In writing of this shipment, Mr. Compere says:

> I have done all that could be done to get them here in good condition. I had to begin collecting two weeks before leaving, in order to get what I did of them, and having no scale to feed them it was very difficult to keep them alive. However, by keeping them in jars, and feeding them with fresh apple every day, I managed to reach here without the loss of any, and it is to be hoped that they will reach you in good condition. There is no question but that they will prove very valuable for California, if once they become established.
>
> The Fiji Government is negotiating with the agents of the Oceanic Steamship Company, to have the steamers of that line call at the Fiji ports en route to and from Australia and California, and the general opinion on the islands is that the steamers will soon call there. Should they do so, there will be great danger for the fruit-growers of California from that quarter, the mango fruit being very badly infested with the maggots of fruit flies. We bred two different flies from various fruits while there, and were informed that more than eighty per cent of the oranges become infested with maggots. We were unable to secure any oranges while there, and the new crop is just setting, so we are unable to say what fly it is that infests them.
>
> Here in New Zealand, we have not found a single specimen of any ladybird since we arrived, and it is very cold yet. We shall leave on December 4th for Sydney, and make a good sending by the "Moana," that will leave there on December 20th.

Under date of Sydney, N. S. W., December 20, 1899, Mr. Compere writes:

> We arrived in Sydney on December 8th, from Auckland, N. Z. Nothing was found in New Zealand that would be of use to us except the fungus that destroys the black scale. Of this I was able to secure a few twigs from olive trees infested with scale, and attacked by this fungus. This fungus I send you packed in moss, and if yet in good condition when it reaches you, try and start it in some hothouse on the black scale. Just tie the twigs on branches infested with scale. Not a single specimen of any ladybird did we find while there, and no traces of any internal parasites.
>
> On my return here I at once started for the Allen and Patterson Rivers districts, this colony. I found the orchards there in a very fair condition, most of them being young yet, but red scale on almost all the trees, and the young fruit already very badly pitted with scale, but no signs of any internal parasites. Only one small orange tree standing close to the water was found to be infested with the black scale on the Allen River, but a little higher up on the side of the mountain I found the brush infested, with no signs of any internal parasites, and none have issued yet from specimens collected. Of the ladybirds there were present in these orchards a few *Orcus chalybeus*, and some beetles of a *Scymnus* that we have not the name of. It is small, black, with a red spot on the wing, and seems to be well distributed throughout the Colony, as I found it in all orchards visited. The beetles feed on red scale, but I don't know if they breed on it, as not a single larva was found. However, I collected as many of the beetles as I could, and send them to you, as well as *O. chalybeus*. There were a few specimens of other *Scymnus* found. On the tree infested with black scale, I found a few beetles of *Orcus australasia*, but no larvæ. On the Patterson River I found about the same conditions as on the Allen River, with perhaps a little more red scale. At these places it gets very hot. The thermometer runs up to 108° in the shade, day after day, and will go as high as 118°.
>
> From here I was driven to Singleton over the mountains, a distance of 35 miles. After driving about 15 miles we came to a milk-ranch, where there were four very old orange trees badly infested with red scale. Obtaining permission from the owner, I shook these trees well, and found a few beetles of the *Scymnus*, with the red spot on the wing, a few *Cryptolæmus montrouzieri*, two beetles of *Vedalia cardinalis*, and three beetles of *Orcus nummeralis*. Arriving at Singleton, I started at once for the orchard that I had

visited on October 3d, at Town Head. I noticed no change in the condition of the trees, except that the young fruit was already well pitted with the red scale, with no signs of internal parasites, and after a day and a half's work shaking all the trees in the orchard, not a single specimen of *Orcus chalybeus* was found, and only a few of the above mentioned *Scymnus*. On a few young orange trees infested with black scale as well as ants, I found *Orcus australasia* breeding and feeding upon the young black scale, and also found that a very large per cent of the larvæ of this ladybird is destroyed by parasites. This was the only larvæ of any of the various ladybirds met with on this trip.

On my return to Sydney, I at once started with Mr. Koebele for Paramatta. There we found very little change in the condition of the scale from what it was in October when we visited the place. The young four-year-old lemon orchard of Mr. Brine is as badly infested with the black scale as any of the orchards in California, and plenty of red scale also. On this black scale, *Orcus australasia* is breeding; thousands of the young larvæ are present; also a few beetles of *Orcus chalybeus*, but only a few on any one tree, and a few of various other *Scymnus* and *Rhizobius*, and a few *R. satellus*, which you will find in the collection I send you by this steamer. All the trees around Paramatta are more or less infested with red scale, and after two days' hard work shaking the trees, we had very little to show for it, and Mr. Koebele gave up disgusted.

The next place that I visited was Kurrajong district, about 30 miles west of Paramatta, and perhaps the largest orange-growing district in this Colony; here the condition of the orchards is indeed appalling. The red scale is worse here than in any place in California. A large number of the orchards have been cut back to the trunks, while the owners of others have scrubbed the trunks and larger branches with soap; others have sprayed their trees; while others have abandoned their orchards, and are letting them grow up to weeds, and some are planting new orchards higher up the mountains. The only ladybird met with on this trip was *Orcus australasia*, feeding on black scale in several places. Very little black scale is to be found in that district, and it is very scattering, but not a trace of any of the other ladybirds was found.

Vedalia cardinalis and *Cryptolæmus montrouzieri* are the only ladybirds in this Colony as far as I have been able to see that do their work as it should be done; however, I will send all beneficial ladybirds that I may find.

I send with this lot a small package of full-grown larvæ of *Orcus australasia*. This open only in a close room, and destroy the package that they come in, and I would suggest that you place all the *australasia* in a jar and try and breed them there; however, do what you think best. I also send you a few *Thalpochares*, larvæ and pupa; these were collected on eucalyptus, and I am told that they rid whole orchards of the black scale, but up to the present time I have not found them on that scale.

In a later communication Mr. Compere writes of his labors:

Since I wrote on December 27th, we have been to Queensland, and two days were spent at Toowoomba, and there the orchards are in a very fair condition. Plenty of red and black scale is to be found there. A large orange orchard about three miles north of Toowoomba, that we visited, was found to be free from black scale, with the exception of a few young trees, but the greater part of the orchard was well stocked with red scale. After a day's work shaking the trees we were only able to secure about three hundred ladybirds between us, and most of these *Cryptolæmus montrouzieri* and *Orcus chalybeus*, with a few specimens of various other ladybirds. There was no sign of any internal parasite on the red scale. The second day was spent about two miles south of Toowoomba. There the orchards are in about the same condition, only that they are well stocked with black scale and more or less infested with red scale. Here we found *Rhizobius ventralis* and *Cryptolæmus montrouzieri*, feeding and breeding upon the black scale, and thousands of the larvæ of both of the beetles were present, as well as numbers of the beetles themselves. There were also great numbers of the internal parasites of the black scale *Dilophogaster californica*, and a few specimens of various other ladybirds, all of which I send you by the steamer "Alameda."

I learn from the growers there that almost every season, and sometimes as many as three times during one season, the lemon and orange trees lose all their leaves, owing to drought, and after a good rain they throw out new wood and leaves, and this had happened already once this season since the trees were in blossom, the young fruit falling with the leaves. Now, this must be taken into consideration, and what effect this may have in checking the scale, especially the red, as that generally infests the leaves in preference to the branches. I find that the market there, as well as at Brisbane, is supplied with citrus fruits from Messina, Italy.

Arriving at Brisbane, I at once noticed that the oleander trees there were free from black scale, something that I had not noticed in Australia before, and I at once began to make a search to ascertain, if possible, what was responsible for the absence of that pest, for certainly the climatic conditions are very favorable for it. On making an examination of all the trees met with, I soon discovered that it was the work of an internal parasite, for on some of the trees were found the old dry shells of the scale with holes in their backs, the majority having two and three, and some with four or five holes. After three days' searching, I managed to locate a few trees with some live scale on, and the little parasite also present; of these I send you a few specimens for identification. I collected quite a lot of oleander leaves and twigs with young live scale on, and send them by steamer to you in the hope that you may succeed in breeding some of the parasites out, but it is a question if you will be able to do so, owing to the fact that the scale is very young yet, and will probably dry up before the parasites will have time to mature; but I have two other trees located there that have some live scale on, and these I did not disturb, one being an oleander, and the other a hedge plant, *Duranta plumieri*. On these also the little parasites were present, laying their eggs in the young scale. These I shall not disturb until the scale is large enough for the parasite to develop in, and then there will be no trouble in transporting them to California. In the meantime, I shall visit Victoria and South Australia.

While at Brisbane, we called upon Mr. Henry Tryon, Government Entomologist of Queensland, and found him to be a very interesting and exceedingly bright man and a very close observer, and I secured a great deal of information from him. He informed me that there was a very small ladybird there that feeds upon the red spider, and I accompanied him for a half-day to try and locate some of them, but the season is yet too early, and no spider could be found. I also spoke to him with reference to this internal parasite of the black scale, and he informed me that he had once bred an internal parasite of that scale there, but could not remember now what it was, and had not paid any attention to it in Brisbane, as it had never been a pest there.

Mr. Koebele and myself will leave at once for Victoria and South Australia. Mr. Koebele will only remain there for two days. He takes the steamer for Java at Adelaide. I shall see what is to be found in Victoria, South Australia, as well as Western Australia, then return here and to Queensland, and see what collections I can make there, and send as many of the beneficial ladybirds over as I can, as everything helps.

Under date of January 17, 1900, Mr. Compere writes:

I send you per the "Alameda," besides the Queensland insects, one package of ladybirds collected at Granville and Paramatta, from trees very badly infested with the black scale. There were very few scattering larvæ of any of them, with the exception of *Orcus australasia*. It is seldom that the larvæ of this ladybird get beyond the pupa stage, being destroyed by internal parasites.

I also send you one small package of a minute ladybird that feeds on the red spider, the same that Mr. Tryon spoke to me about at Brisbane. This keeps the red spider in check here to such an extent that it is very difficult to find it. I shall try and collect as many of them as possible, as we have plenty for them to do.

I also send dead specimens of the Queensland fruit-fly (*Trephritis tryon*, Froggatt) that I bred from peaches, prunes, plums, and apricots; also specimens of parasite bred from it.

The growing of deciduous fruits in Queensland is a thing of the past, and it made me sick at heart to see the destructive work of this pest there. Not a single peach, plum, prune, or apricot is allowed to escape its attack.

You will also find the specimens of the internal parasite of the black scale from Brisbane packed in the same package with the fruit flies, and in a tin tube are some specimens of the scale, showing its work. This will be a big thing for us if we can once establish it in California.

In a communication dated Sydney, March 14, 1900, Mr. Compere gives the following review of his work:

Since writing to you on January 17th, I have been continuously traveling from place to place. Among the places visited were Victoria and Tasmania. At the former place there was practically nothing to be found in the way of parasites or predaceous insects, except what is to be found here in New South Wales, and none in any quantity. There is a corps of inspectors in that Colony who compel orchardists to spray or fumigate their trees whenever any scale becomes noticeable, and that is principally the red and San José scale, the latter being confined to a few orchards. As for the black scale, it has very little chance to thrive there, owing to the intense heat at times. During my stay in that Colony the thermometer registered from 140° to 150° in the sun, day after day. The young scale are cooked by the thousands, and it is only on plants or trees in shaded places that the scale becomes a pest. No signs of internal parasites, and none bred from material brought with me. However, a few ladybirds were found feeding upon the young scale. These I have since learned were *Rhizobius hirtellus*, Crotch.

It was my intention, or rather, ours, for Mr. Koebele was with me for a time, to go to Adelaide, but owing to the breaking out of the bubonic plague, travel between that place and the other colonies had almost ceased. From Victoria I returned here and collected as many of the little ladybirds, *Scymnus vagans*, Blk., as I was able to find, as well as some others that I forwarded to Mr. Craw on February 14th, by the steamship "Mariposa," when I immediately started for Tasmania. There I found a very different climate from the other parts of Australia that I have visited. No citrus fruits are grown, but it is an exceedingly fine apple-growing island, and last season (1899) there were six hundred and sixty-five thousand cases of this fruit exported from that colony.

I found *Mytilaspis pomorum*, Bouche, to be very common throughout the island, not only infesting the apple, but also various other trees and plants; no signs of internal parasites working upon it, and no ladybirds feeding, with the exception of *Orcus australasia*, Boisd., which feed upon it occasionally.

The pear slug (*Eriocampoides limacina*, Retius) is a very serious pest. Whole pear and cherry orchards are completely defoliated by it, as well as the hawthorn hedges and various other plants and trees. The codling moth is also very conspicuous, and California is credited with having supplied Australia with that pest. The woolly aphis is also very prevalent there, and I am informed that *Leis conformis*, Boisd., feeds upon it at times, but this I did not see them doing there, but did so in Victoria. The black scale is also found there, but not so numerous as in other parts of Australia, owing to the absence of its food plant; but wherever an oleander or other plant that it usually attacks is found, it was always present, and in the city of Launceston I found some of the pepper trees infested with it, being the first time that I have noticed that since I have been in Australia; no signs of any internal parasites, but I found a few *Orcus australasia* larvæ feeding upon it, also a few beetles of *Rhizobius hirtellus*, and on a wattle tree, about 8 miles from Launceston, the larvæ of *australasia* and that of *ventralis*, as well as some of the beetles of both, feeding upon *Ericoccus* sp.

Some red spider was also found on the island, but the little ladybird or its larvæ were always present, and Mr. Lea, the Government Entomologist, gave me its name as *Scymnus vagans*, Blk., and has it recorded from all parts of Australia, feeding upon this pest. This is going to be of great value to California, for the red spider is a very serious pest in some places, and you will see that this *Scymnus* will establish itself in the State very soon, if once liberated upon that pest, and I don't think that your Board will ever have to make any apology for it owing to climatic conditions.

Orcus chalybeus and *Cryptolæmus montrouzieri* were not met with in Tasmania; otherwise, the same ladybirds that are found there are to be found here, with the exception of *Halyzia mellvi*, Muls. Of this one I was only able to secure a few specimens. I cannot say what its food scale is, no larvæ being found, but on an acacia tree I saw hundreds of their dry pupa skins, and it was on this tree that I secured the few beetles that I did. No trace of any scale was found, but Mr. Lea informed me that it is an *Aspidiotus* feeder.

To Mr. Lea I feel most thankful for the kindness with which I was treated during my stay in the Colony, and also for a great deal of valuable information with regard to the condition of things in Western Australia, where he had been Government Entomologist for four years previous to accepting a similar position in Tasmania a year ago. He also furnished me with the names of some ladybirds that I had been unable to secure before. I spoke to him particularly with reference to the dipterous parasite of the grasshopper, and he informed me that it would be useless to look for it there, but here in New South Wales was the place where it was to be found, and that he had, previous to going to Western Australia, collected and counted twenty-five thousand of the hoppers, and that ninety per cent of the females and fifteen per cent of the males contained parasites; but owing to the continuous drought for the past few years he did not know whether I would be able to secure any this season or not. He also informed me that the red and black scale were very much worse in Western Australia than in any other part of Australia, and no internal parasites exist on the former, but that *R. hirtellus* would at times become very numerous, but that its larvæ were mostly all destroyed by parasites, while on the black scale there is nothing but what is found in New South Wales.

I received a letter from Mr. Koebele, written at Freemantle, Western Australia, in which he advised me not to go there at this season of the year, so that I have about given up the idea of visiting that part of Australia at this time.

Writing from Sydney under date of April 11, 1900, in relation to the grasshopper parasite, Mr. Compere says:

Since I wrote on March 14th, I have been investigating the grasshopper or plague locust and its dipterous parasite, *Masicera pachytyli.* Among the places visited was Corowa, the home of Mr. J. P. Buggy, the man that first called Mr. Olliff's attention, in 1890–1, to the fact that from sixty to seventy per cent of the hoppers were being destroyed by a parasite at that time in the Corowa district.

While at Corowa I called on Mr. Buggy, who is a school-teacher, and a very intelligent man. He informed me that in February, 1891, his attention was attracted to the hopper and its parasite by noticing the ground covered with dead hoppers, and all of them containing a hole in the head, just behind the eye, and it was then that he called Mr. Olliff's attention to them, but since that year he has paid no more attention to the subject, as since then the hoppers have not been numerous there, but added that they were a plague in 1899, within ten miles of Corowa.

On investigation I find that from 1890–1 until 1899 there have been comparatively no grasshopper swarms of any extent in any part of the Colony, but in the latter part of August and the early part of September, 1899, immense swarms made their appearance all over the Riverina country, including some parts of the Corowa district, doing great damage to wheat pasture and vineyards. I also find that the hoppers of 1890–1 were a different species from those of 1899; those of 1890–1 being *Pachytylus australis*, while those of 1899 were *Epacromia terminalis*, the latter being a South Australian species, and became so thick at Seymour, Victoria, the past season, I am informed, that they stopped the railway trains for a time.

At Corowa, in a week's time I was able to collect a few hundred of the hoppers *Pachytylus australis*, and placed them in a large jar with fresh food, thinking that I would be able to keep them alive in that way and send them to you alive, but in that I was disappointed, for they began to die soon after being placed in confinement, and by the time that I arrived in Sydney they were nearly all dead. These I packed in a box with damp moss, and placed them at once in a cool chamber, until I could place them on the steamer, and send them to you in that condition. I opened a large number of the hoppers at Corowa, but in none of them could I find any maggots or traces of parasites; however, from about twenty specimens that I retained in my collecting tube, one fly has made its appearance, and that differs somewhat from Mr. Olliff's *Masicera pachytyli*, and Mr. Buggy warned me before leaving not to be disappointed if I did not secure a single parasite from the hoppers collected, as the five years' drought had changed the conditions a great deal, but that after a good wet season or two there would not be any trouble in securing plenty of the parasites.

Mr. Froggatt informed me that he had collected a great many thousands of *Epacromia terminalis*, from various parts of the colony, including the Corowa district, but he was not able to breed one parasite from them, although he collected them for that purpose. The past season, Mr. Froggatt made several experiments with the African locust fungus, but with very poor results, owing to the dry atmosphere at the time the hoppers made their appearance.

Writing from Sydney, under date of June 6, 1900, Mr. Compere says:

The climate here will compare favorably with that of Southern California, and the country is a perfect paradise for insects, both beneficial and otherwise. The citrus trees are very badly infested with *Aspidiotus aurantii* and *Chionaspis citri;* some trees are also badly infested with the soft brown scale (*Lecanium hesperidum*), and trees infested with this scale are unable to grow or bear fruit. This is confined to the mandarin trees only. *Orcus australasia* is the only ladybird found feeding upon it, with no signs of internal parasites; while on the first two mentioned scales, both *Orcus australasia* and *Orcus chalybeus*, as well as various scymnids, are found feeding both in the larvæ and beetle stages, but they are not able to cope with the pests, owing to the fact that they are themselves so heavily parasitized. Were it not for this fact, *Orcus australasia* would itself be able to keep them in check. The camphor trees in the town of Grafton are very badly infested with the red scale, and on these only *australasia* was feeding. Not a single *chalybeus* was I able to find, and I shook hundreds of the trees. These trees have been planted along the streets of Grafton for shade, and a great many of them have one side killed by the scale. *Aspidiotus rapax*, *A. nerii*, *A. ficus*, and *Diaspis rosæ* are all very troublesome there, while *Lecanium nigrum* has complete possession of the mulberry and fig trees, as well as the wild castor beans, and strange to say that *Cryptolæmus montrouzieri* was the only thing feeding upon it. Not a single *Rhizobius ventralis* could be found, and it was on this scale that it did such good work in the Hawaiian Islands. I found an *Icerya* that is new to me there, and from what I saw of its work on one tree where the *Novius* had not yet begun to work on it, I do not hesitate to say that it would unquestionably become a more serious pest than *purchasi*, if once established in a new country without its enemy *Novius koebelei.* I found specimens of this scale infesting all kinds of trees and plants, and the *Novius* always present, with the exception of one tree which they had not yet found. *Icerya purchasi* was also found scatteringly there, and on one rose bush I found a very few larvæ that looked different to me from *Novius* or *Vedalia*, and is perhaps the same as the red one with the black stripes from Melbourne. I found no *Vedalia*, but presume it is there also, as I spent no time looking for it, but I noticed that a great many of the *Icerya purchasi* had been destroyed by internal parasites. Various species of *Dactylopius* are to be found, but all held in check by *C. montrouzieri*, while the few apple trees that are growing in that district are completely covered with the woolly aphis, with nothing feeding upon it; but what pleased me most on this trip was to find that *Lecanium oleæ* was completely held in check in that district by the same internal parasite found in Brisbane. There are plenty of oleander trees growing along the river, and on every one of them traces of this scale were to be found, but seldom was there a tree or plant found with any living scale, all having been destroyed by the parasite and bearing from one to five of the exit holes. The material I send you by the "Moana" I was five days collecting, so you can judge how effectual this little parasite is.

On no tree was I able to find more than one branch or cane with any living scale, and find it the same on indigenous vegetation, also on some young orange trees. There is no better climate in the world for black scale to thrive in, and it would be as abundant as the other scales were it not for this parasite. I have no hesitation in saying that if any reach you alive, you will find no difficulty in establishing it in the State. The material that I send by this boat I packed with wet moss around the lower ends of the cuttings, while the tops are wrapped in dry moss to absorb the moisture caused by the honey dew secreted by the scale, as that would cause a mold in a few days, when not exposed to the air or packed in the ice-room of a steamer. Some of this material is very badly infested with other scale, and I also found specimens of the new *Icerya* mentioned above, on some trees where these branches were taken, so be very careful in handling it. Some of the branches are infested with *A. nerii*, from which you may be able to breed some internal parasites, and in the same package, wrapped in paper, are a few pieces of wild passion vine, infested with a scale that I am not quite sure of. This you will find also containing internal parasites. These pieces were close to the ground and covered with leaves and brush, while the top of the vine that was exposed was free from scale, and very likely you will find some *Tineid* larva on this material also.

The ladybirds that I send by this steamer are a mixed lot, but mostly *Orcus australasia* and *chalybeus*, and various scymnids, all collected from trees infested with *A. aurantii* and *C. citri*, a few beetles of *Coccinella repanda*, a few *Platyomus lividigaster*, a few *Leis conformis*, and a few *Scymnus notescens*, all feeding on aphis. A few specimens of *Scymnus vagans* are also in the package, and the next ones of the red spider feeders that I may find I shall send in a mail package, as I think they will stand the heat better than the cold. I also send two packages of the new *Icerya* with *Novius koebelei* beetles and larvæ. As soon as you have removed the ladybirds from these packages, burn them up and take no chances. There is also one small package with *Icerya purchasi*, with a few ladybird larva; see what you can breed from this. In liberating the box of assorted ladybirds, look them over very carefully, and see that there are no *Epilachna vigintiooto punctata* that may have found their way into the collecting tube, as at times my sheet would be covered with them. They resemble *Leis conformis* very much, and are a serious pest to farmers in some parts of Australia. I find the pupa of this very heavily parasitized in the Clarence River district.

HORTICULTURAL QUARANTINE.

The Horticultural Quarantine System in this State is now as well nigh perfect as the limited means at the disposal of this Board will permit. All vessels arriving from foreign ports are met on their arrival, and no plants are allowed to land until they have been first thoroughly inspected and pronounced free from injurious pests by a competent inspector. All plants, trees, shrubs, or fruits brought in as freight are also inspected and not permitted to land until there is every assurance that they are perfectly clean. In the case of fruits and plants arriving by rail, this office is notified by the railroad company of such arrivals, and arrangements are made with the county commissioners, or with a special agent from this office, to personally inspect the same.

The following comprises the number of vessels arriving at the port of San Francisco from foreign countries, with plants, trees, fruit, etc., on board, from October 2, 1898, to October 31, 1900:

From—	No.
China and Japan	81
Australia and New Zealand	27
Central and South America	72
South Sea Islands	8
Sandwich Islands	41
Victoria	59
Mexican ports	25
Manila, via Japan	27
England	2
Hamburg	1
Astoria	1
Portland	12
Total	356

Following is a summary of the plants, trees, fruit, etc., found on said vessels and inspected:

Trees, plants, etc.—bundles and cases	884
Fruit, vegetables, etc.—crates and cases	54,423
Total—crates and cases	55,307
Trees and plants—loose	155,846

Disposition.

Fumigated—	Pineapples	3,580 crates.
	Oranges	12,656 boxes.
	Limes	1,261 boxes.
	Plants	853 crates.
	Trees	41 cases.
	Trees	2 bdls.
	Pineapple plants	146 crates.
Destroyed—	Oranges	29 boxes.
	Plants	74 cases.
	Trees	5 cases.
	Shipment of Cucumbers.	
Dipped—	Trees	2 bdls.
	Trees	2 cases.
Deported—	Hop plants	152,000 roots.
	Hop plants	3 sacks.

Following is a summary of inspections within the State:

Orange trees—carloads	16
Fruit trees—carloads	44
Ornamental plants—bundles	806
Packages received for examination	1,640
Specimens	870

On one of these steamers were found two boxes which contained oranges from an "orange maggot" district of Mexico. The oranges were infected with the dreaded "Mexican orange maggot" and were immediately destroyed, thereby preventing the dissemination of such a destructive insect, which, if not checked, would have done untold damage to the citrus fruit industry of the State. All oranges from the infected districts found in the possession of passengers and crew are promptly destroyed.

The quarantine system could not be perfect while there was a chance of shipping infected stock through the mails, and in view of the American occupation of the Hawaiian and Philippine Islands, and the heavy mail now passing between California and those islands, there was a constant danger that some of the very many pests with which they are infested, and from which we are free, might find their way into our State in this manner. At a special meeting of the State Board of Horticulture, held in Sacramento, July 31, 1900, this matter was discussed, and the following resolutions adopted:

WHEREAS, Dangerous insect pests exist in the Hawaiian and Philippine Islands, which destroy, annually, seventy-five per cent or more of certain products raised in these islands; and

WHEREAS, Said pests do not exist in any part of North America, and would do great damage if introduced; therefore, be it

Resolved, That we ask the assistance of Hon. Charles Emory Smith, Postmaster-General of the United States, requesting him to instruct the postmasters of ports of entry of the Pacific States to submit all mail matter containing fruit or plants to the horticultural officers of the States thereof, for their inspection before delivery.

These resolutions were forwarded to the Postmaster-General, and his attention was called to their importance to the fruit interests of California, and the following communication was received in response thereto:

OFFICE OF THE POSTMASTER-GENERAL,
WASHINGTON, D. C., September 5, 1900.

The State Board of Horticulture, State of California, Sacramento, California:

GENTLEMEN: I have received your communication of the 7th ultimo, inclosing the resolutions adopted at a special meeting of the State Board of Horticulture, held on July 30, 1900, requesting, in view of the danger to fruits and plants from certain insect pests which exist in the Territory of Hawaii and the Philippine Islands, and are unknown in North America, that the Department issue instructions to postmasters at all ports of entry on the Pacific Coast to submit all matter containing fruits or plants, emanating from said Territory or Islands, to the horticultural officers of the State wherein such postoffices are located, for their inspection before delivery. This matter was submitted to the Secretary of Agriculture, and in a communication dated the 17th ultimo, he recommends that your request be complied with.

I have, therefore, issued an order to all postmasters on the Pacific Coast, embodying the instructions suggested by you, a copy of which is herewith inclosed for your nformation.

All matter submitted to you under this order will, after examination, if it contains no dangerous insects, be forwarded to destination by the postmaster at Sacramento.

Whenever any fruits or plants are infected, the package will be detained by the postmaster, and you should communicate with the addressee and arrange with him for its destruction, or take such proceedings for this purpose as may be authorized by the laws of your State.

The Department would not feel warranted in opening sealed matter and submitting the contents to you for examination, without the consent of the addressee; but whenever such matter contains, or is believed to contain, fruit or plants, it will be forwarded to the postmaster at Sacramento, and notice sent to you and the addressee; and you can correspond with him and secure his consent to have it opened and examined.

The Postoffice Department has always refused to let mail go out of its custody, on any account, before its delivery to the addressee or upon his order. The postmaster at Sacramento will therefore submit all this matter to you in charge of one of the clerks, to whom it should be returned after examination.

I hope these regulations will aid you in the purposes you have in view.

Very respectfully,

W. S. SHALLENBERGER,
Acting Postmaster-General.

The following order was issued and a copy forwarded to every postmaster on the Pacific Coast:

ORDER OF THE POSTMASTER-GENERAL.

OFFICE OF POSTMASTER-GENERAL,
ORDER No. 1151. WASHINGTON, D. C., September 5, 1900.

WHEREAS, The State Board of Horticulture of the State of California has represented to the Postoffice Department that dangerous insect pests exist in the Territory of Hawaii and the Philippine Islands, which are not known in any part of North America, and which, if introduced therein would do great damage to fruit and plants; and the Secretary of Agriculture having confirmed such representation;

Therefore, it is Ordered, That all postmasters at ports of entry on the Pacific Coast intercept and forward, under cover of penalty envelopes: In the State of Calfornia, to the postmaster at Sacramento; in the State of Oregon, to the postmaster at Salem; and in the State of Washington, to the postmaster at Olympia; all mail matter containing fruit or plants emanating from the Territory of Hawaii or the Philippine Islands.

The postmasters at Sacramento, California; Salem, Oregon; and Olympia, Washington, will submit all such matter received by them to their respective State Boards of Horticulture, to wit: The State Board of Horticulture, Sacramento, California; the State Board of Horticulture, Salem, Oregon, and the Commissioner of Horticulture, Olympia, Washington; for the inspection of such board or commissioner before the same is forwarded to the addressee, in order to ascertain whether the fruit or plants therein contain any dangerous insects.

Postmasters at ports of entry where such matter is first intercepted and forwarded to any of the postoffices herein named will send a notice thereof to the addressee, giving the name of the postoffice to which sent, of the board or commissioner to which it will be submitted, and the reasons for such action.

All packages of fruit or plant submitted to a State board or commissioner for examination under these instructions should, when no dangerous insects are found therein, be promptly forwarded to the addressee. If the original wrapper on any package has become so torn, or the address so defaced, as to render it unsafe to forward the same to destination therein, it should be inclosed in a penalty envelope.

When any package contains infected fruit or plants, the postmaster will notify the addressee, and detain the same until the State board or commissioner can arrange with the addressee, or take such other proceeding as may be proper for the destruction thereof.

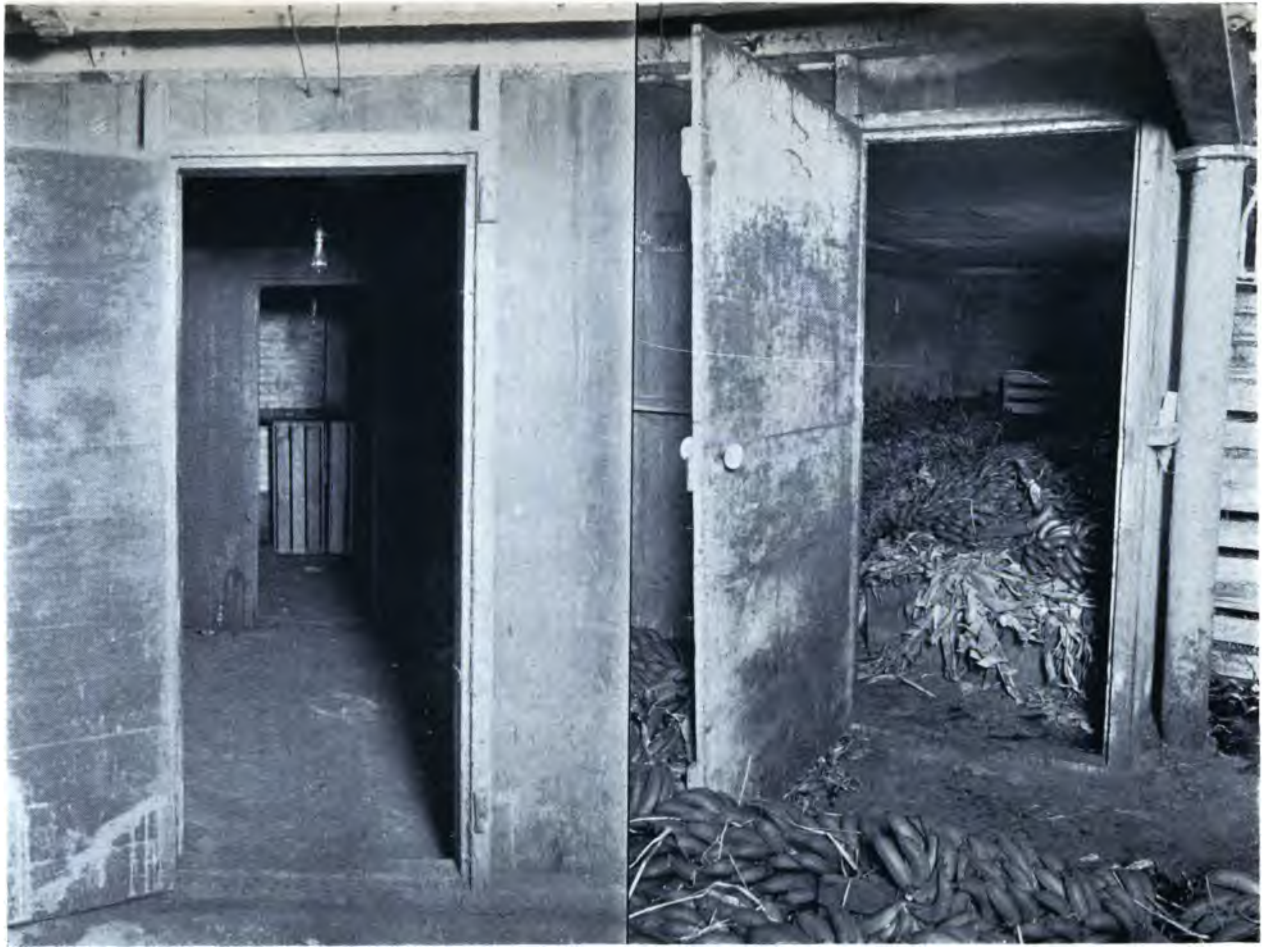
This order will apply to registered matter, but sealed matter must not be opened and submitted for examination to a State board or commissioner without the consent of the addressee. Where such matter contains or is believed to contain fruit or plants, it will be forwarded to the proper postmaster, in accordance with these instructions, and notice thereof sent direct to the proper State board or commissioner, and to the addressee, informing the latter of the name of the postoffice to which sent, of the board or commissioner to which it will be submitted, and the reasons for such action, in order that the State board or commissioner may correspond with the addressee, or take such other action as may be proper. Upon authority of the addressee, sealed matter may be opened and submitted to the proper State board or commissioner for examination.

W. S. SHALLENBERGER,
Acting Postmaster-General.

In line with the quarantine work of the Board an Act (H. R. 6634), passed by the last session of Congress, is the only act of that session in any way relating to the agricultural interests of the country. This law was the direct outgrowth of the regulations of this Board; Section 2 being a copy of Rule 12 of the Rules and Regulations of the State Board of Horticulture, adopted August 15, 1894.

In order more efficiently to protect ourselves against the importation of foreign pests an effort was made to secure the passage of a law through Congress providing for national horticultural quarantine. A bill was prepared and introduced, and every effort is being made to secure its passage.

This forms an almost complete quarantine system, and it is nearly impossible to introduce any new pests into our State on foreign stock.



DOUBLE FUMIGATING ROOM,
Maintained at San Francisco, for treating infected fruit, plants, etc., arriving from foreign countries.

MEXICAN ORANGE MAGGOT.

One of the great threatening dangers to our citrus sections at the present time is the Mexican orange maggot (*Trypeta ludens*). This pest, finding a foothold originally in the State of Morelos, Mexico, has followed the line of the railroads in that country, until it is now very generally distributed there. There is continual travel between California and Mexican points, aided now by railroad facilities. Oranges have been shipped from infected districts to the Eastern States, and there has always been danger that the same cars that carried them would find their way into our California orchards and bring the pests with them. Stringent rules have been adopted against the importation of oranges into the State from any Mexican point; so that danger from this source is reduced to a minimum, but the danger from infected cars still remained. To nullify this we sought an interview with J. A. Fillmore, Manager of the Pacific System of the Southern Pacific Railroad Company, and William Sproule, Freight Traffic Manager of the Southern Pacific Railroad Company, Edward Chambers, Traffic Manager of the Santa Fé Railroad Company, and Robert Graham, Manager of the Fruit-Growers' Express. The whole matter was thoroughly discussed, and the life history of the insect explained; it was also shown that there was danger that some of the larvæ, having left the fruit and hidden in cracks or crevices of the cars, might be returned to California, or that they might even pass through the pupa state hidden in unseen crevices of the cars to find their way out when such cars had reached our California orchards. A few of these flies, or their maggots, so introduced, might be enough to start a destructive pest in our orange orchards that would in a few years ruin the industry. The introduction of the cottony cushion scale into California and the gypsy moth into Massachusetts are cases in point; the former nearly destroyed the citrus industry of the State, and cost untold thousands of dollars before a remedy was found, and the latter, where a single female moth escaped, has caused millions of dollars' worth of damage, and has not yet been controlled, although the State of Massachusetts has spent hundreds of thousands of dollars fighting it.

The railroad officials were keenly alive to the danger threatening the State, and the carrying business from this source, and willingly agreed to second the State Board of Horticulture in any protective measures it might suggest. They have agreed that no Mexican oranges shall be transported over their lines into California, and that the numbers of all cars used in carrying oranges from Mexico to Eastern points shall be kept and recorded. Upon entry into Mexico, and when unloaded at their destination in the East, they will be immediately disinfected with live steam, applied with hose from the engine, or in some other way that will prove satisfactory.

These safeguards will give our orange-growers ample protection from this dangerous pest, and a guarantee of perfect safety, as under their enforcement it is practically impossible for this insect to get a foothold.

CO-OPERATIVE MARKETING.

Not least among the many beneficial works of the State Board of Horticulture may be mentioned the labors in behalf of the more profitable marketing of the orchard products of the State. The necessity for coöperation among the orchardists was early recognized. Improvement in grading and packing, a responsible guarantee for the contents of each package, uniform labels, and capable management were all needed. None of these could be acquired by individual action. Better shipping facilities were required, lower rates of freight and better service, a full knowledge of the requirements of the markets and their conditions from day to day, all were needed if fruit-growing was to be made profitable. These ends could only be attained by coöperative effort, while individual action and its necessary keen and unfair competition could not but destroy the chief industry of our State and bring ruin upon the individual. Many had already learned the truth of this by bitter experience, and when the Board took up the great work of coöperation, it found earnest helpers among the more intelligent fruit-growers of the State. This Board has been instrumental in the organization of every fruit-growers' association in the State.

In the earliest Fruit-Growers' Conventions held under the auspices of this Board, the coöperative packing and marketing of fruits was given a prominent place, and each convention has carried the work still further forward. A number of coöperative unions have been formed handling dried and fresh fruits, citrus fruits, raisins, wines, etc. Many of these have developed weak points and after one or two seasons' trial have gone to pieces, but the necessity for coöperative work has forced itself so strongly upon our producers that they have rallied after each failure, and, profiting by past mistakes, have come to the front again stronger for each experience. Coöperative organizations now in existence in the State are numerous and cover nearly the whole field of fruit production.

REMOVAL OF THE GERMAN EMBARGO.

The rapid spread of the "pernicious scale" in the Eastern States and the alarming stories of its devastation in some sections there attracted the attention of the German government, and in 1898 a virtual embargo was placed upon American fruits, both fresh and dried. Samples of the condemned fruit were returned from Hamburg at the solicitation of this office and a careful microscopic examination was made of a large number of these samples, on none of which were any scales discovered, either living or dead. This resulted in a lengthy correspondence with the German officials, and their final conviction of the fact that the desiccating process through which our fruit goes destroys all possibility of scale life upon it, even if it existed. It was claimed on the part of Germany that the embargo was merely a protective measure to prevent the introduction into the orchards of that country of what had proved so terrible a pest in this, and as soon as the authorities there were convinced that there was absolutely no danger lurking in our dried fruits, the embargo was relaxed and the shipments from California have much increased. The importation of American fruit into Germany was nearly doubled in the year ending June 30, 1900, over the preceding year, the value being $2,168,386, a very large portion of which consists of California dried fruit. The embargo on fresh fruit continued longer, and late into the present year, but it, too, has been so far relaxed that clean fruit can now find admission without difficulty, and we may hope for a greatly increased trade in this line with the German empire.

MEMORIALS AND RESOLUTIONS AFFECTING THE FRUIT INDUSTRY.

The following memorials and resolutions adopted by the last State Fruit-Growers' Convention were transmitted to the respective bodies addressed, immediately upon the close of the convention:

(1) Memorial to the United States Congress protesting against any proposed reductions from existing tariff rates on imports of French prunes, walnuts, almonds, preserved fruits, olive oil, wines, etc., and requesting the United States Senators to so modify the proposed reciprocity treaty between the United States and France as to permit the present tariff on imports of French fruits, nuts, and wines to remain unimpaired, etc.

This memorial was transmitted to Senator George C. Perkins, who presented the same to Congress.

(2) Memorial requesting our members in Congress to introduce a bill and labor for its passage, setting aside from settlement for homes all mountain lands unoccupied in the State of California, and restricting the devastation caused by prospecting for mineral and mining purposes.

The receipt of this memorial was acknowledged, but no action was taken in the matter.

(3) Memorial requesting our Senators and Representatives to assist, by every means in their power, in securing the passage of a bill that would prohibit the adulteration of food products, and the sale of any article of food or drink under a false or fraudulent label.

A bill to this effect was prepared and introduced, but failed in its passage.

(4) Memorial requesting our Senators and Representatives to assist in the passage of a bill adopted by said convention to provide for the inspection and treatment of trees, plants, buds, fruit, etc., imported into the United States.

A bill covering this matter was prepared and forwarded for introduction, but was not introduced, as there was a bill on the files nearly identical. It was thought best to amend it, embodying in it the most important features of our bill. This proved a very difficult task, owing to opposition from Eastern nurserymen. Had we succeeded in the passage of this bill, our work of inspection of plants, trees, fruit, etc., from foreign parts would have been materially benefited, and greater results accomplished.

(5) Memorial asking our Senators and Representatives to urge the Secretary of Agriculture to send a qualified entomologist to investigate why it is that the codling moth does not exist, nor does injury to apple and pear crops, immediately along the Pacific Coast tide-water line as far north as British Columbia.

(6) Memorial petitioning Congress to proceed at once to enact such legislation as will enable the Government of the United States to proceed to the immediate construction of the Nicaragua Canal, upon the basis of the Walker commission.

Action on this memorial is pending.

(7) Memorial appealing to the Board of State Harbor Commissioners to carry out the provisions of the law relative to establishing a "free public market" in San Francisco, for the sale of perishable products, and if, in their judgment, further legislation is necessary, that they recommend such additional enactments as will enable them to speedily and effectually establish such a free public market as the producers and shippers desire.

Action is pending.

(8) Bubonic plague:

WHEREAS, The San Francisco Board of Health and Dr. Kinyoun, a Federal health officer, placed a quarantine on the State, on the supposition that there has existed cases of "bubonic plague," which His Excellency Henry T. Gage, Governor of the State, after a thorough investigation, made by eminent scientists, proved to be false; and

WHEREAS, Said action has done the fruit interests of California great injury, causing our products shipped East to be boycotted, etc.; therefore, be it

Resolved, That the action of the Governor in publishing said facts to the world be commended, and that the Secretary of this Board at once forward copies of this resolution to all fruit auction houses and to all firms dealing in California fruits in the East, as proof that no bubonic plague ever existed in California.

Much benefit resulted from the foregoing resolution, as it had been telegraphed all over the world that the State had been quarantined.

PUBLICATIONS.

CITRUS CULTURE. For some years past requests for information in regard to citrus culture have been numerous and increasing, and in compliance with these requests it was determined to make a special investigation of this subject. To this end work has been prosecuted for the last five years, involving close study and personal investigation of the different citrus sections, and many experiments have been conducted having in view the determination of the best methods of handling the fruits of this family. Large numbers of photographs on the subjects treated were taken, and illustrations were made therefrom. The result of these labors was transmitted to His Excellency Governor Gage, in April, 1900, in a report on the "Culture of the Citrus in California."

The demand for this report was very large, and the edition (5,000 copies) has proved too small and is about exhausted. Copies have been mailed to every section where citrus fruits are grown, and an endeavor has been made to reach every person interested therein.

Part I of the report consists of an historical chapter on the California citrus fruit industry, dating from its incipiency, showing its growth to the present day, primitive orchards and development, table of citrus fruit products, pollination, hybrids, methods used in hybridizing plants, period of fruitfulness, the sweet orange, the sour orange, the bitter orange, the shaddock, the pomelo, the Otaheite orange, the *Citrus trifoliata*, or deciduous orange, etc., and their many descendants. The propagation of the orange "from seed to grove"; budding; new methods of working over large trees; planting, and planting systems; soils, irrigation, and cultivation; subsoil plowing; pruning, high and low methods; the orange crop, gathering; orange dropping, diseases; fertilization; fruit protection.

Part II—The Lemon. Varieties; pruning, new methods illustrated; treatment of the lemon; lemon sizes; standard boxes; cost of handling, etc.; the Sicilian lemon industry, illustrating the newest methods practiced abroad.

Part III—The Citron. Propagation; varieties; preparation of the citron rind; commercial importance, etc.

Part IV—The Lime. Varieties; propagation, etc.

Part V—Products of the Citrus.

Part VI—Insect pests affecting the Citrus. Beneficial insects, etc.

The report consists of 260 pages, and contains eighty-two photo-engravings taken from nature, and eleven full-page illustrations.

THE OLIVE.

In answer to urgent requests, an investigation of the supposed unfruitfulness of the olive in different portions of the State was made. These deductions were printed in pamphlet form, and widely distributed. The pamphlet consists of 83 pages, and is profusely illustrated. It contains an historical review of the olive industry; chapters on the propagation of the olive, giving newest methods, each method illustrated with cuts from photographs; on the unfruitfulness of the olive, soil, planting, pruning, grafting, budding, varieties, extracting olive oil, filtering and clarifying, pickling, processing, insect pests affecting the olive, beneficial insects, etc.

The demand for this bulletin is also very large, and although 10,000 copies were issued, but few copies are on hand.

INSECT DISEASES, FUNGOUS DISEASES, ETC.

The standard remedies for insect pests, and tree and plant diseases, as published by the State Board of Horticulture within the past few years, are still generally used by fruit-growers throughout the State. The supply of bulletins containing formulas for preparing such remedies became exhausted, and in order to keep the fruit-growers advised as to the improvements in the methods of preparing and applying them it became necessary to issue another bulletin. Personal investigations were required to be made in different localities, which occupied the time of our officers for several months during the season. An edition of 20,000 copies was issued. The bulletin consists of 32 pages; there are thirty photo-engravings and three full-page illustrations.

CONVENTION REPORT.

The report of the last convention (twenty-fourth) was printed in pamphlet form. It is a pamphlet of 152 pages, and is well printed—new form of type and headings being used by the printer. An edition of 5,000 copies was issued, and which is about exhausted.

REVIEW OF THE FRUIT SEASON.

The fruit season of 1900 has been somewhat unusual in its peculiarities. The fruit crop has been spotted, and the same variety has not given the same results in different localities. This has been due largely to different climatic conditions, variableness of rainfall, and peculiarities of temperature. We have had three successive years of deficient rainfall, but in the middle and northern counties the precipitation was so well distributed that little damage resulted from the shortage. The lack of winter rainfall was compensated for by the late spring showers, which carried the crops over the danger limit, and, while hardly a full average is reported from any section, crops generally have been better than hoped for during the winter months. In the southern counties the spring rains were not so bounteous, and orchards which depended upon the natural moisture of the soil, supplied from the rainfall, suffered severely. Deciduous trees have suffered in this section from other causes, probably from the very warm weather in January, which caused the buds to swell to the bursting point. This was followed by a severe cold spell, which drove the sap back to the roots and the trees did not recover until midsummer, but remained dormant, dropping the greater part of their buds. The result of this was the failure, to a great extent, of the stone fruit crop in the southern counties. In some small and favored localities there was a fair crop of apricots, cherries, and plums, but as a whole the deciduous fruit crop of the south was a failure.

In the central and northern counties, conditions were improved; the winter rainfall, though far below normal, was much heavier, and heavy late rains left the orchards in fair condition as to moisture. The fruit crop through this section has been fair to good. In many places the deficiency of rainfall during the past three seasons has caused a serious shortage of moisture in the soil, and many trees have died in consequence, but this condition is not general. In Santa Clara County there was a very heavy drop in prunes during the summer.

Orchard trees as a rule have weathered the dry seasons in good condition, and the total output of fruit from the State has increased.

The deciduous fruit crop was unusually early this season, and the early shipments were much in excess of those of 1899. Later in the season there was a falling off, due largely to the coming in of the Eastern fruit crops, and at the end of the season shipments had fallen somewhat below those of last year. The aggregate volume of shipments of varieties for the present season as compared with last year up to October 25th, are given below:

	Carloads.	
	1900.	1899.
Apricots	157	91
Cherries	235	80¼
Peaches	1,374	2,608
Plums	1,106¼	881½
Pears	2,099¾	1,683¾
Apples	256	266½
Mixed	25½	54
Grapes	765	739½
Quinces	8¼	3
Persimmons	2	----
Totals	6,028¾	6,407½

A falling off in the total shipment of fresh fruits to this date of 378¾ carloads. This shortage is not so much due to any falling off in the fruit crop, as to the increased demand for canning purposes and the better prices realized at home. While there has been a slight falling off in the shipments of deciduous fruits, there has been a great increase in the quantity of citrus fruits sent out of the State; these having, up to October 31st, aggregated 17,609 carloads, as against 10,351 cars up to a corresponding date last year, and an excess of 2,656 cars over the shipments of 1898, the greatest preceding citrus season in the history of that industry in California. The value of this crop, according to reports received from the secretaries of the several citrus fruit-growers' associations, will be from $8,000,000 to $8,500,000, an increase of from $1,000,000 to $1,500,000 over the money received for shipments last year, and more than $1,000,000 in excess of the best year heretofore.

The steady and rapid growth of the fruit industry of California is set forth in the following comparative tables* of shipments out of the State for the past decade:

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* By General N. P. Chipman in his report to the State Board of Trade.

GENERAL SUMMARY AND COMPARATIVE TABLES OF SHIPMENTS BY RAIL AND BY SEA, OF FRUITS, WINE, BRANDY, AND VEGETABLES FOR TEN CONSECUTIVE YEARS. (TONS OF 2,000 POUNDS.)

Kinds.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.
Green Deciduous	34,042.0	50,548.9	59,374.5	80,112.3	90,692.2	66,254.8	57,638.3	72,350.2	69,732.2	96,943.6
Citrus Fruits	34,209.6	46,921.4	34,857.5	80,757.0	58,964.0	115,825.5	99,156.0	98,547.0	180,658.9	131,916.8
Dried Fruits	32,297.5	32,919.0	29,762.2	45,386.2	51,828.2	61,386.4	48,522.8	75,159.7	76,662.7	86,925.3
Raisins	20,560.1	22,779.1	26,673.4	37,409.9	46,954.4	46,390.1	34,434.6	39,065.8	47,796.3	36,008.7
Nuts	787.1	1,358.9	2,061.9	1,796.5	3,953.5	3,234.7	4,972.6	5,808.6	5,815.8	6,608.4
Canned Fruits	40,060.9	32,395.0	55,273.7	31,626.3	60,352.6	41,395.5	45,546.9	73,464.7	52,219.7	75,240.0
Carloads Fruit by rail and sea	16,195.7	18,692.2	20,800.3	27,708.8	31,274.4	33,547.2	29,026.7	36,439.6	43,288.6	43,364.3
Carloads Vegetables by rail	*	*	*	6,978.4	4,276.6	3,613.6	1,130.6	4,243.8	3,045.6	2,613.6
Carloads Vegetables by sea	*	*	*	*	410.0	40.0	487.7	490.8	801.4	790.7
Carloads Wine and Brandy by rail and sea	*	4,765.1	4,832.5	6,620.9	7,663.5	8,056.8	7,609.0	6,897.8	9,014.0	8,713.9
Carloads Fruit, Vegetables, Wine, and Brandy by rail and sea	16,195.7	23,347.3	25,632.8	40,928.5	43,624.7	45,257.4	38,254.0	48,072.0	56,149.6	55,482.5

*None reported.

SHIPMENTS OF FRUIT OUT OF STATE BY SEA IN 1899.

(Tons of 2,000 pounds.)

Place of Shipment.	Green Deciduous	Citrus.	Dried.	Raisins.	Nuts.	Canned.	All Kinds.
San Francisco	3,140.5	81.0	795.4	374.5	60.0	11,468.3	15,919.7
Total carloads	314.1	8.1	79.5	37.5	6.0	1,146.8	1,592.0

SHIPMENTS OF FRUIT OUT OF STATE BY RAIL IN 1899.

Showing Terminal Points of Shipment.

(Tons of 2,000 pounds.)

Place of Shipment.	Green Deciduous	Citrus.	Dried.	Raisins.	Nuts.	Canned.	All Kinds.
San Francisco	47.0	7.0	6,336.0	317.0	382.0	18,901.0	25,990.0
Oakland	2,399.0		379.0	3.0	173.0	5,811.0	8,765.0
San José	17,460.0		32,538.0	41.0	81.0	8,915.0	59,035.0
Stockton	13,242.0	3,550.0	19,443.0	32,164.0	264.0	3,937.0	72,600.0
Sacramento	53,951.0	374.0	9,485.0	619.0	887.0	7,328.0	72,644.0
Marysville	6,423.0	1,967.0	7,377.0	365.0	162.0	7,507.0	23,801.0
Los Angeles	175.3	48,872.1	4,052.6	590.0	3,320.7	10,220.9	67,231.6
Orange County	15.5	7,812.5	1,254.6	67.3	1,268.7	452.2	10,870.8
Riverside County	78.0	26,211.8	400.0	199.1	10.0		26,898.9
San Bernardino Co.		38,772.4	4,785.4	741.3		699.6	44,998.7
San Diego County	12.3	4,269.0	79.3	527.5			4,888.1
Total carloads by rail	9,380.3	13,183.6	8,613.0	3,563.4	654.8	6,377.2	41,772.3
Total carloads by sea	314.1	8.1	79.5	37.5	6.0	1,146.8	1,592.0
Total carloads from State by rail and sea	9,694.4	13,191.7	8,692.5	3,600.9	660.8	7,524.0	43,364.3

TABLE OF GAINS AND LOSSES, 1898 AND 1899 COMPARED.

(Carloads of 10 tons each.)

Kinds.	1898.	1899.	Gain.	Loss.
Green Deciduous	6,973.2	9,694.4	2,721.2	
Citrus Fruits	18,065.9	13,191.7		4,874.2
Dried Fruits	7,666.3	8,692.5	1,026.2	
Raisins	4,779.6	3,600.9		1,178.7
Nuts	581.6	660.8	79.8	
Canned Fruits	5,222.0	7,524.0	2,302.0	
Vegetables	3,847.0	3,404.3		442.7
Wines and Brandy	9,014.0	8,713.9		300.1
Totals	56,149.6	55,482.5	6,129.2	6,795.7
Loss carloads				666.5

The following table shows the quantity of various fruits shipped during the past six years:

VARIETIES OF FRUIT SHIPPED.

Varieties.	1895.	1896.	1897.	1898.	1899.	1900.
Pears	1,187	1,624	1,640	1,595	1,684	2,300
Peaches	1,289	976	1,316	1,103	2,625	1,400
Grapes	1,010	712	1,100	734	847	700
Plums	465	407	742	542	885	1,200
Apricots	162	172	177	123	90	157
Cherries	180	88	239	297	85	235
Apples	105	53	61	596	545	300
Quinces	13	8	24	1	19	8
Figs	--------	2	3	--------	--------	--------
Nectarines	5	1	10	--------	2	--------
Persimmons	--------	--------	2	1	1	--------
Mixed	152	9	9	15	24	30
Cars not reported	--------	--------	--------	--------	117	--------
Totals	4,568	4,052	5,323	5,007	6,924	--------

As the season of 1900 is not over at the present writing, the totals given are largely estimates, based upon shipments made up to date.

The following table shows the steady increase in fresh fruit shipments for the past decade:

	Pounds.
1890	74,646,000
1891	98,680,000
1892	111,689,000
1893	159,900,000
1894	179,576,000
1895	132,587,000
1896	115,300,000
1897	145,250,000
1898	139,550,000
1899	193,900,000

The following tables give the imports of various fruits into the United States for the fiscal years ending June 30, 1897–98, 1898–99, 1899–00. A careful reading will show that there is yet a home market for many fruits which can be produced in California. There was paid out for the present year ending June 30th, for currants, $916,876; for figs, $513,895; for lemons, $3,666,877; for oranges, $1,077,035; for prunes and plums, $47,647; and for raisins, $531,049; a total of $6,753,379 for fruits which came directly in competition with California products.

IMPORTS OF FRUITS INTO THE UNITED STATES FOR THE FISCAL YEARS 1898, 1899, AND 1900, TO JUNE 30TH.

Kind.	1897-1898.		1898-1899.		1899-1900.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Bananas		$4,236,418		$5,665,588		$5,877,835
Currants	25,186,210	837,987	30,849,253	798,357	36,251,504	916,876
Dates	13,561,434	371,992	12,943,305	324,087	19,904,512	410,349
Figs	9,628,426	509,002	7,284,058	356,762	8,812,487	513,895
Lemons		2,848,130	225,942,718	4,398,004	160,197,996	3,666,877
Oranges		886,772	38,497,669	1,097,596	68,618,818	1,087,035
Plums and Prunes	303,992	39,660	600,360	63,574	442,737	47,647
Raisins		381,889	4,933,201	282,400	10,308,913	531,049
Prepared and Preserved		922,357		1,020,644		1,238,519
All others		1,294,855		1,579,652		1,989,707

Quantity is given in pounds.

EXPORTS OF FRUITS FOR THE FISCAL YEARS 1898, 1899, AND 1900, ENDING JUNE 30TH.

Kind.	1897-1898.		1898-1899.		1899-1900.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Apples, dried—lbs.	31,031,254	$1,897,725	19,305,739	$1,245,733	34,964,010	$2,247,851
Apples, fresh—bbls.	605,390	1,684,717	380,222	1,210,459	526,636	1,444,655
Oranges		339,396		282,313		269,850
Prunes	15,940,791	1,021,888	5,615,565	380,847	25,922,101	1,646,316
Raisins	3,109,639	167,062	4,659,807	242,620	2,415,351	139,678
Nuts		82,504		66,899		62,370
All others		2,033,845		1,997,649		2,545,451

Quantity is given in pounds.

Since the annexation of the Hawaiian Islands trade has very materially increased in that direction, and fruit shipments especially have been much larger than heretofore. This is a market almost exclusively Californian, and one which will steadily grow for many of our fruits for the cultivation of which the soil and climate of the Islands are unfitted. The following table gives the exports of fruits to that point for the twelve months ending June 30, 1900:

	Value.
Apples, fresh (9,383 bbls.)	$18,329 00
Oranges	7,860 00
Prunes	844 00
Raisins	5,796 00
All other, green, ripe, and dried	27,575 00
Canned	41,245 00
Nuts	5,758 00
Total	$107,407 00

Fruits and nuts, amounting in average value to $17,256,090, were imported into the United States during the years 1895–1899. The principal importations were from Italy, which furnished 31 per cent of the whole. Next to Italy, the British West Indies were the most important source of supply, furnishing 16 per cent. From Spain we received 8.2 per cent, from France 6.3 per cent, from the United Kingdom 5.5 per cent, from Colombia 4.7 per cent, and from Asiatic Turkey 4.1 per cent. Costa Rica sent us 3.6 per cent, Greece 3.6 per cent, Honduras 3.4 per cent, and Cuba 3.3 per cent. Nicaragua was the source of 2.4 per cent, Canada of 2.4 per cent, Brazil of 1.2 per cent, and Mexico of 1.1 per cent.

ORANGES. The orange crop of the season 1899-1900 was the largest ever produced in the State, and shipments have been continuous, some fruit going forward every week in the year. Early shipments commenced in the latter part of October from Porterville, and were followed soon after by shipments from Butte County, and then from Southern California. Heavy shipments to the Eastern markets were forwarded during the holiday season, after which a short lull in the market occurred until the regular season opened with the Navel crop, succeeded by later varieties. Shipments of Valencia Lates are still going forward, as the new crop is ripening. With the difference in period of ripening in the different parts of the State, and the different varieties of fruit overlapping in the periods of ripening, the orange season in California is now continuous.

The shipments of citrus fruits for the past season have been unprecedented, and up to September 27th had amounted to 17,662 cars, an excess of 7,338 cars over last year's shipments to the same date, and 2,663 cars over the shipments of 1898, the heaviest previous year in our citrus history. The reports of the secretaries of the several citrus fruit-growers' associations in this State show that the amount of money the crop will bring into the State will be between $8,000,000 and $8,500,000, or an increase of from $1,000,000 to $1,500,000 over last year. In fact, a gain of at least $1,000,000 over the best year heretofore.

There has been little change in the usual planting of new acreage, for while the drought has somewhat affected planting in the southern counties, it has been largely increased in the central and northern parts of the State, and very many new orchards have been planted along the foothill sections through the San Joaquin and Sacramento valleys.

At the opening of the season there was great difficulty between the orange-growers and the railroad company over the question of routing the fruit. The railroad claimed the right to send it over any route that might be convenient to them, while the growers claimed that unless they had the right to choose the route they would be subjected to great inconvenience and loss. The railroads finally yielded their point, and the crops moved without further friction.

The following table shows the steady growth of the citrus industry for the past decade:

Citrus Fruits—Oranges and Lemons.

Season.	Carloads.	Boxes.
1890-91	4,016	1,325,000
1891-92	4,400	1,452,000
1892-93	5,871	1,972,500
1893-94	5,022	1,687,500
1894-95	7,575	2,545,200
1895-96	6,915	2,323,500
1896-97	7,350	2,649,600
1897-98	15,400	5,174,400
1898-99	10,875	3,654,000
1899-1900	17,321	--------

Of these about 2,000 carloads were lemons, leaving 15,721 carloads of oranges, the heaviest shipment ever made out of the State. There is every indication that the crop of 1900-1 will be even larger than that of the past season, probably exceeding 20,000 carloads. Of course, there are many contingencies that may reduce the quantity before the season is ended, but with a favorable season we may expect that these figures will be reached.

The value of imported oranges still exceeds our exports. This is largely due to the fact that we have yet a limited foreign market for our fruit; England has been our principal customer, and our shipments there have been light.

Exports of Oranges from the United States.

1898	$339,396
1899	282,313
1900	269,858

Imports of Oranges into the United States.

1891	$2,339,987
1892	1,210,338
1893	1,695,469
1894	1,127,005
1895	1,997,266
1896	2,694,131
1897	2,324,907
1898	886,722
1899	1,097,596
1900	1,087,035

LEMONS. The success attained in lemon-growing in various sections, with the demand and good prices received for this fruit, has given great impetus to it in the past few years, until it now promises to become one of the most important of our horticultural pursuits. The lemon has always been contemporary with the orange in California, but the latter has received the greater attention, while the lemon in the past was regarded more as a curiosity, or an ornamental shrub, than as a source of revenue. The success by several far-seeing men drew attention to the lemon as a money crop, and it rapidly increased in popularity. It was discovered that the lemon would thrive in districts unsuited to the orange; that while it would not stand as low a temperature as the orange, it did not require so high a temperature to bring its fruit to perfection. Methods of curing and preparing the fruit for market were perfected; better varieties, and those more suitable to our conditions, were introduced; and gradually the lemon forced its claims upon our attention until it is now one of the most important of our horticultural products, shipments this year being about 2,000 carloads.

The crop this season was very good, both in size and quality of the fruit, and prices were satisfactory. Shipments have been steadily going forward, declining later in the season, owing to the bulk of our fruit having found its way to market and the arrival of the Italian crop. There is no danger to be apprehended of over-stocking the market with lemons, for the demand is a steadily growing one, and besides our local product, heavy importations are required to fill it. For the year ending June 30, 1900, there were imported into the United States, foreign lemons to the value of $3,666,879.

Following is the import of foreign lemons into the United States for the fiscal year ending June 30th:

	Boxes.
1892-93	2,646,000
1893-94	2,644,000
1894-95	2,048,770
1895-96	2,758,701
1896-97	2,443,595
1897-98	1,794,835
1898-99	2,693,800
1899-1900	2,292,000

PRUNES. The prune season opened with wonderful promise. Reports from all parts of the State seemed to indicate the largest crop ever produced here. When partially grown, however, the fruit began to drop badly, and this trouble increased as the summer advanced, until, in the Santa Clara district, some orchards were entirely stripped of fruit, and the crops in most places were very much reduced. In Southern California the trees did not leaf or blossom until midsummer, and bore no fruit; still, taking the State as a whole, there has been a fairly good prune crop, although it runs largely to the smaller sizes and does not come up to early expectations, yet in bulk it exceeds that of any previous year, running up to probably 150,000,000 pounds. The increase is largely due to new orchards coming into bearing.

The California Cured Fruit Association on September 1st fixed the price for the present season's crop. The association is divided into three districts. District No. 1 consists of Sonoma, Contra Costa, and Alameda counties; District No. 2 comprises the rest of the State, with the exception of the Santa Clara Valley, which is District No. 3. The basis of quotations is on District No. 3, Santa Clara Valley, for which prices were established as follows:

In bags, f. o. b. California:

40-50's	7 cents.
50-60's	5¼ cents.
60-70's	3¾ cents.
70-80's	3¼ cents.
80-90's	2¾ cents.
90-100's	2¼ cents.
100-120's	2 cents.

The prices on prunes from District No. 1 (Sonoma, Contra Costa, Napa, and Alameda counties) are one-eighth of a cent less on all sizes, with the exception of 100-120's, the price on which is 2 cents. The prices on prunes from the balance of the State are one-fourth of a cent less on all sizes, with the exception of 100-120's, the price of which is 2 cents. The 40-50's were put on the basis of 5½ cents, and the 50-60's on a 4-cent basis. The small sizes, 100-120's, on a 3½-cent basis. While the large proportion of small sizes might warrant a lower price on the 100-120's, yet the association could not set the price at a lower figure, as this would make the season unprofitable to many prune-growers who have only small sizes to market. Even at the present prices, after deducting commission, etc., prices on small sizes will hardly pay.

The four sizes are comparatively scarce, and the present prices will undoubtedly be maintained. The directors guarantee that the prices will not be lowered, and as the association controls a majority of the crop, the guarantee will undoubtedly be kept.

The setting of prices was delayed until a full canvass of the prune district could be made. The directors are praised on all sides for the admirable way in which they have handled the affairs of the association so far.

If the present crop can be marketed, the association will have been of immense value to prune-growers, as without the association prices would have been ruinous. With an immense crop of prunes in Europe, it will be impossible to export any except the larger sizes, and as these are comparatively few, the larger part of the crop must be marketed in America. Prices would certainly have dropped to a 2-cent basis if the association had not been organized.

The growth of the prune industry in California has been phenomenal. The first shipment of dried prunes was made from San José in 1867. About 500 pounds was consigned to a firm in San Francisco, which was the entire crop of California. Since then thirty-three years have elapsed and the output is now 150,000,000 pounds. The following table gives the product each year for the past twelve years, and indicates the steady growth of the industry:

	Pounds.
1889	17,000,000
1890	16,000,000
1891	27,500,000
1892	22,500,000
1893	52,180,000
1894	44,750,000
1895	64,750,000
1896	55,200,000
1897	97,780,000
1898	90,420,000
1899	96,500,000
1900 (estimated)	150,000,000
Total for 12 years	734,580,000

Receipts of Foreign Plums and Prunes.

	Quantity, Pounds.	Value.
1891	41,012,571	$2,139,215 00
1892	10,374,874	496,078 72
1893	23,225,821	1,049,896 48
1894	8,749,349.5	413,769 51
1895	15,311,695	533,748 21
1896	852,944	71,512 54
1897	736,987	74,165 46
1898	15,940,791	1,021,888 00
1899	5,615,565	380,847 00
1900	25,922,101	1,646,316 00

RAISINS. The raisin pack will fall somewhat short of the average this season. This should be about 4,000 carloads. The present indications are that the season's pack will reach about 3,500 carloads. They are handled almost wholly through the Raisin-Growers' Association. Serious difficulties arose among the members of this association early in the season, and there was serious danger of its disruption. This was avoided, however, and at a conference held July 16th, between the raisin-packers and the directors of the California Raisin-Growers' Association, the agreement between the association and the packers was consummated, and the contract between the packers and the association, which had been held in escrow, went into effect. The association had secured about fifty-one thousand acreage on three years' contract, or about eighty-five per cent, and, together with the two-year contracts, it controlled ninety per cent. The association, therefore, has control of the raisin output for the seasons 1900, 1901, and 1902.

The career of the association for the past year has been a stormy one, and several times it looked as though the dissensions between the officers of the association and the packers would wreck it. The trouble began when President Kearney proposed a plan by which the raisin-packers would be forced out and the growers would do their own packing. Under this plan, half a cent a pound was to be deducted from the price of the growers' crop for the packing expense. About thirty thousand acres were secured to this plan, but the opposition of the packers made itself felt. Through the influence of banks, this scheme was abandoned. The packers' hostility to Kearney made his resignation necessary, and he left for Carlsbad, Germany. The association had a great difficulty in securing the required ninety per cent of the acreage. On July 2d, under the agreement with the packers, the association should control ninety per cent, but lacked about six thousand acres, and asked to have the time extended one week, which the packers granted; even then the association lacked several thousand acres, and not until some time later did the packers decide to go ahead with the association. Great difficulty was experienced in securing the required ninety per cent. Many of the growers held out to the last, and only signed after all the influence possible was brought to bear upon them, and it was evident they must sign or the association would not be successful. Many of these held out on account of their sympathies for Mr. Kearney, others because they believed they had certain advantages in being outside of the association, but, by securing ninety per cent of the acreage, the association is assured of being able to control the raisin market.

On September 22d, the Raisin-Growers' Association fixed the prices on the crop of 1900, as follows:

	20-lb. Box.
2-crown London layers	$1 50
3-crown London layers	1 60
4-crown fancy clusters	2 00
5-crown Dehesa clusters	2 50
6-crown Imperial clusters	3 00
	Per Pound.
2-crown Standard loose Muscatels	$0 06
3-crown Standard loose Muscatels	06½
4-crown Standard loose Muscatels	07
Seedless Muscatels	06½
Bleached Thompson's Seedless—	
Fancy	12
Choice	11
Standard	10
Prime	09
Unbleached	09
Sultanas—	
Fancy	10¼
Choice	09½
Standard	08¾
Prime	08
Unbleached	08

Payments as per terms of packer's contract, with a discount of 1¼ per cent for cash.

Mr. M. Theodore Kearney, former President of the Raisin-Growers' Association, furnishes the following review of the raisin industry in California:

Raisins have been produced to a limited extent in California, for many years, but it was not until 1885 that the quantity produced made any impression on the market. Beginning with that year the production of raisins in California was as follows:

1885	9,400,000
1886	14,060,000
1887	16,000,000
1888	19,000,000
1889	25,000,000
1890	38,000,000
1891	52,000,000
1892	57,000,000
1893	85,000,000
1894	103,000,000
1895	91,360,000
1896	68,250,600
1897	93,704,000
1898	80,631,000
1899	71,568,000

It will be seen that the production reached its maximum in 1894; from that time since the yield has materially diminished. This is due partly to an excessive production and to the panic of 1893, which so demoralized business as to greatly lessen the demand for raisins. The total area of raisin vineyards in California amounts to 59,000 acres, of which 3,200 acres are in the southern counties of Orange, Santa Ana, San Bernardino, Riverside, and San Diego; 1,800 acres in the northern counties of Solano, Yolo, and Sutter; and 54,000 acres in the central counties of Fresno, Kern, Kings, Tulare, and Madera—about three fourths of the latter acreage being in Fresno County.

The varieties of grapevines used for the production of raisins are the Muscat of Alexandria and the Muscatel de Gordo Blanco; these two being equally desirable, there is no special effort made to select one over the other. The Muscat vine is peculiar in one respect, and that is that to produce the best results it requires a very rich soil and an ample supply of moisture. It is also found that while these vines can be made to grow on almost any kind of land, the soil best adapted to their growth is the reddish sedimentary deposits which are found in considerable quantity in the neighborhood of Fresno.

Climate has very much to do with the success of raisin-growing. Ten or fifteen years ago raisin vineyards were planted in many parts of California, and in the northern and southern districts to a far greater extent than in the central district, but experience has shown that the country around Fresno is peculiarly favored in the matter of climate, and the raisin-growers there find that their crops mature and are ready to pick several weeks earlier than in the adjoining counties. This difference in time is of great importance, because it enables the grower to cure his crop in the sun and with much less risk of damage from early rains.

The decrease in the yield noted above is caused by a large percentage of the raisin vines having been pulled up by the owners, owing to the unprofitable character of the industry. For five years prior to the panic of 1893, raisins were sold by the growers in the field at an average of 5 cents per pound, but from that time on the price decreased until in 1897 it dropped as low as ¾ cent per pound, and the farmer found it cheaper to feed his working horses with raisins than to feed them with barley. Through all this depression the farmers were so discouraged that in Fresno County alone 20,000 acres of raisin vineyards were uprooted. Much of this demoralization in prices was due to a system of shipping raisins on consignment to Eastern brokers. To put a stop to that practice, and to place the industry on a paying basis, the farmers organized themselves into the Raisin-Growers' Association, appointed a board of directors, placed their crops absolutely under the control of this board of directors, and having established a system of inspection of grades, fixed their own prices upon the product, and required payment before shipment—doing away entirely with the consignment business. The movement was an entire success the first year, and the result was an average increase in prices of raisins from 1½ cents per pound to 2¾ cents per pound in 1898. The success of their efforts in 1898 induced them to reorganize again for 1899 and 1900, and assisted by the fact of there being a short crop in 1899, amounting to only 52,000,000 pounds, they were enabled to advance their prices to an average of 4½ cents per pound. It is to be presumed that the success they have met with in their organization will induce them to continue it indefinitely, and there will no doubt be a moderate increase in the planting of raisin vineyards. It should, however, be borne in mind that, owing to frosts, drought, and unfavorable curing weather, the crops of the past three years have not been much over sixty per cent of the average crop. If there should be a full crop the coming year, the probability is that that quantity would be all that would be required by our home market as at present developed, and without a material reduction in prices it is hardly to be expected that a foreign market can be secured for any surplus.

Within the past two years the process for taking the seeds out of raisins by machinery has been introduced, which makes the article much more attractive to housekeepers. This process not only deprives the raisins of the seeds, but also preserves them, so that there is very little danger of their deteriorating in quality. Already there are eight or ten large seeding plants in operation in Fresno, having a capacity to seed and pack 1,500 ten-ton carloads during the season, and it is thought that within a short time nearly all the raisins produced will be put through this process.

Imports of Foreign Raisins Into the United States for the Past Ten Years, Ending June 30th.

	Quantity.	Value.
1891	39,572,655	$2,018,879
1892	20,687,640	964,309
1893	27,543,563	1,266,342
1894	13,751,050	554,081
1895	15,921,278	651,420
1896	10,826,094	460,200
1897	12,650,598	567,039
1898	6,593,833	381,889
1899	4,933,201	282,400
1900	10,308,913	531,049

Exports of Raisins for the Years 1898, 1899, and 1900, Ending June 30th.

	Quantity.	Value.
1898	3,109,633	$167,062
1899	4,659,807	242,620
1900	2,415,351	139,678

CANNED FRUITS.

Of the canned fruit pack for the present season, the "California Fruit-Grower" says:

"The California pack of fruits and vegetables for 1900 has been made, and in all probability the total will fall below that of 1899. The season has been uneventful. Prices paid by canners were fair, yet more moderate than those of last season. Help at the canneries was generally scarce, but no more so than in other years. The supply of cans was about all that it should have been, but at this writing there is a delay in getting labels. The pack of extra standards and full standard apricots was not up to expectation. Extra standard pears are in short supply. A fair pack of peaches was made, though the better grades were not equal to the trade demand. Only a short pack on blackberries and raspberries resulted, and pro rata deliveries are in order. The tomato pack, owing to an early ripening of the crop, will be much lighter than was expected.

"The California Fruit-Canners' Association continues an important, if not a dominant, factor in the canned goods industry of the State. Its influence without question has been in the direction of equalizing and steadying the industry in the State, from the purchase of fruit from the orchardist down to the marketing of the labeled and cased product. It has disbursed vast sums for fresh fruit, labor, cans, cases, fuel, etc., and its operations generally are found to be business-like and invariably satisfactory to all concerned. It is a pleasure to go on record as saying this.

"But the influence of the California Fruit-Canners' Association is also felt in yet another direction and in another manner. The situation is now held so well in hand that the jobber can purchase at the beginning of a season, feeling secure in the wisdom of his action. This fact has not yet been learned by all wholesale houses, for this season a number neglected to place their orders early. They, however, have since discovered that their delay was anything but advantageous to themselves and by another season's opening they doubtless will have learned that the association, in a way and to a large extent, limits its packing operations to keep pace with the orders it receives. It does not guarantee to maintain prices, but its control of the situation is such that jobbers may safely feel attracted, by the season's opening figures.

California Canned Fruit Pack.

	Cases.
1890	1,495,300
1891	1,571,200
1892	1,602,370
1893	1,001,640
1894	1,528,815
1895	1,639,807
1896	1,602,446
1897	1,942,982
1898	2,085,166
1899	3,003,171

"The actual pack of fruits last year in this State was 3,003,171 cases, as compared with 2,085,166 cases in the previous year, and 1,942,982 cases in 1897. The total pack of fruits and vegetables last year in California amounted to 3,756,602 cases, as compared with 2,602,322 cases in the previous year, and 2,370,139 cases in 1897.

"The California canned fruit business occupied the center of the stage in point of interest throughout the last half of 1899. Prices for future delivery opened fairly low, and a brisk demand was manifested. Then began an advance which did not cease until the increase over opening figures had reached in some lines nearly 35 per cent.

"Packers from the earliest operations had to contend with high prices for fresh fruit, which was pushed up in value by the immense demand on the part of fresh fruit shippers in an effort to supply the Eastern markets. Later in the season there was a serious shortage in tin cans, which had a tendency to greatly harass packers in their operations. At the end of the year stocks in first hands were extremely small. The year 1898 was a good year for canned goods, but 1899 was a wonder.

California Fruit and Vegetable Pack by Varieties.

Variety.	Cases 1898.	Cases 1899.
Apples	9,398	36,655
Apricots	411,273	722,272
Cherries, black	34,555	6,498
Cherries, white	126,745	30,434
Currants	1,869	1,266
Grapes	23,627	41,776
Nectarines	825	736
Pears, Bartlett	367,446	483,384
Pears, other	3,676	24,722
Peaches	662,889	993,124
Plums	114,097	137,413
Quinces	655	712
Strawberries	10,128	11,435
Raspberries	3,586	5,784
Blackberries	19,921	23,129
Gooseberries	2,163	1,165
Total table fruits	1,792,853	2,520,505
Pie fruits	93,521	212,664
Gallon fruits	166,242	216,307
Jams and jellies	32,550	53,695
Total fruits	2,085,166	3,003,171
Tomatoes	400,091	583,061
Peas	15,034	25,966
Asparagus	81,620	105,881
Beans and other vegetables	20,411	38,523
Total fruits and vegetables	2,602,322	3,756,602

"The imports of California canned fruits into the United Kingdom during the twelve months ended December 31, 1899, made a total of 533,774 cases, as compared with 335,696 cases in the previous year. The imports of California canned fruits into the United Kingdom during the eight months ended August 31, 1900, make a total of 659,303 cases, as compared with 481,725 cases for the corresponding period a year ago. The imports of California canned goods into the United Kingdom for the last six years are given in table form with this. They show a regular and rapid increase from year to year.

English Imports of California Canned Fruits.

	Cases.
1894	95,817
1895	140,731
1896	281,858
1897	323,128
1898	335,696
1899	533,774
1900 (8 months)	659,303

"Thirty years ago canned goods were a luxury, relatively expensive, and only used in emergencies, on shipboard, or at remote places where other food was unobtainable. To-day their use is universal among the poor as well as the rich. It would be difficult to find a home, a hospital, a hotel, a club, a steamer, or a buffet car without its assortment of them. No home so humble, no home so magnificent, but one will find there canned goods in greater or less quantity. They are used in hut and in palace, and California canned fruits are served on the tables of European royalty.

"The production of 'canned goods' in the United States is now between 900,000,000 and 1,000,000,000 cans per annum, and four cardinal reasons may be given for the great growth of the industry in the past twenty-five or thirty years. They are:

"1. Great reduction in the cost of production;

"2. Great improvement in the quality and the proved healthfulness of all canned goods;

"3. The great variety of food products obtainable in cans;

"4. Attractive labels."

DRIED FRUIT.

There has been a heavy pack of dried fruit this season aside from prunes. Apricots all over Northern California, and in a few favored localities in Southern California, have yielded a good crop, and a very large percentage of this has been dried. The same is true of peaches, which, however, have not been so generally a good crop as apricots. Pears have done well, and there is no diminution in the quantity of dried pears that will go to market this season. While the fruit crop of 1899 was a good one, there was so large a demand for fresh fruit in the East, and on the part of the canneries at home, that the dried fruit pack fell below normal. The following table gives a comparative statement of the dried fruit pack since 1893. The figures for 1900 are not available, as the season is not completed:

Year.	Peaches.	Apricots.	Apples.	Pears.	Plums.	Nectarines.	Dried Grapes.	Figs.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
1893..	16,800,000	9,500,000	3,800,000	2,640,000	1,550,000	780,000	4,850,000	890,000
1894..	30,540,000	28,750,000	5,850,000	6,530,000	2,750,000	1,250,000	4,520,000	1,550,000
1895..	24,500,000	10,650,000	4,560,000	5,400,000	4,500,000	1,325,000	4,250,000	2,750,000
1896..	16,450,000	6,750,000	2,350,000	9,650,000	2,150,000	600,000	2,710,000	2,165,000
1897..	27,150,000	30,125,000	5,250,000	6,350,000	3,250,000	285,000	3,450,000	3,250,000
1898..	10,960,000	8,240,000	3,520,000	6,620,000	2,460,000	180,000	640,000	4,780,000
1899..	34,800,000	11,600,000	5,600,000	5,760,000	3,360,000	640,000	440,000	5,800,000

Prices for dried fruit of the crop of 1899 were generally fair, and the crop entered into rapid consumption. The conditions under which the crops were sold, however, were not satisfactory to the growers generally, as they were forced into competition with each other, and the market, which they were interested in maintaining, frequently broke. This condition led to the organization of the California Cured Fruit Association. The following table gives the output of dried peaches in California for the past sixteen years:

	Pounds.
1884	2,250,000
1885	3,150,000
1886	4,250,000
1887	4,500,000
1888	8,550,000
1889	5,250,000
1890	12,250,000
1891	13,250,000
1892	13,500,000
1893	16,800,000
1894	30,540,000
1895	24,500,000
1896	16,450,000
1897	27,150,000
1898	10,960,000
1899	34,200,000

For 1900, the pack of dried peaches will fall below that of 1899, while there will be a large excess of apricots and pears, and an increase in all other lines. It is yet too early in the season to form an accurate estimate of the total pack, but it is safe to say that it will equal that of 1899.

OLIVES. The season of 1900 has been an exceptionally good one for olives. In a few locations in the southern portion of the State there has been a poor yield, but with this exception the crop has turned out well. Prices have been fair, ranging up to $60 per ton, and the pack of pickles and oil will be unusually large. No accurate estimate can be made of this at the present time, as the season is not yet over.

That there is yet an unsupplied home market for our olive oil is shown by the following table of imports into the United States from foreign points for the past eight years:

Fiscal Year.	Gallons.	Value.
1892-93	686,852	$891,424
1893-94	757,478	909,897
1894-95	775,046	952,405
1895-96	942,598	1,107,049
1896-97	928,567	1,134,077
1897-98	736,877	923,800
1898-99	930,042	1,090,254
1899-1900	967,702	1,170,871

Very much trouble has been experienced in some sections, especially in the southern counties, owing to the non-productiveness of many olive orchards, and a thorough investigation of this trouble and the causes leading up to it was made by this office, with the results as given below:

Non-Productiveness of the Olive.—The question of the non-productiveness of the olive tree in certain localities is at present agitating the minds of many growers throughout the State; several orchards, although old enough to bear, not yet having given remunerative returns, and others that bloom profusely but only setting few fruits, being cited as instances. The behavior of the olive in this respect is not new, and has been understood for ages and is due to many causes, but primarily to the improper management of the tree, imperfect bloom, deficient pollen, the ravages of the black scale, propagating from unfruitful sorts, and lastly to weakened fruit buds caused by excessive spraying with strong caustic and crude oily materials, and fumigating with gases too strong for the buds. While spraying and fumigating at times become essential for subduing the black scale, to which the tree is subject, especially in the coast regions or in localities of humid atmospheric conditions, unless used with moderation and applied at the proper time, they cause the weakening of the fruit buds and retard their fruiting power. In my investigations I have often found olive-growers spraying either at the wrong time or with materials that not only injured the buds very materially, but had no effect whatever on the insects. Such condition of affairs exists everywhere, and the trees are treated from one to three times a season. Can it be wondered, then, that the trees fail to set their bloom with all these hindrances, rather than being encouraged in healthfulness looking toward a profitable production?

Buds weakened by any cause put forth weak peduncles, which wither and lose hold before the flowers that are attached to them have developed. The flowers also develop unnaturally, lacking fertilizing power, and either wither and fall before fertilization takes place, or never open, thus failing to set fruit.

Trees grown from seed have a tendency to revert to the wild type, or a type entirely distinct, some of which fruit, while others seldom do. The character is also changed by pollen impulse.

There are a great many trees distributed among the missions throughout the State, that, for natural, unexplained causes, have never as yet produced fruit in any quantity, the tendency of the trees being to throw their growth to foliage instead. Many orchardists seeking stock for propagating purposes planted cuttings in large numbers from such shy-bearing trees, and trees grown therefrom have been distributed indiscriminately throughout the State. Such trees have proved a great disappointment, for they have not yet produced fruit to pay.

Almost every variety of olive known to the Old World has been imported into the State and planted indiscriminately before the fruiting qualities were tested or the adaptability to our soil and climate shown. Several of these have not yet produced fruit in any quantity, while others are very shy bearers. Many of these varieties fruit for awhile when the trees are young, but on becoming older seem to degenerate and cease to bear fruit, the branches dying in the center and the energies of the tree being wasted in the production of growth rather than of fruit. Some of these varieties are also deficient in sexual strength of the bloom, not having the fertilizing power essential for the setting of the fruit. For several seasons I have observed in orchards, in many portions of the State, little clusters of berries about half the size of peas. On opening these berries the inside was found to be full of a gumlike substance, and without a pit, showing deficiency in pollen strength. Other berries, about the same size or larger, with pits, being the result of late blooming. In many such trees clusters of dried-up blossoms are often found without any visible pollen in the flowers, which had died for want of fertilization. The behavior in the fruiting of the greater portion of the olive varieties so largely introduced has yet to be studied and experimented upon. That all varieties, irrespective of the climatic and soil conditions of the locations from which imported, planted in a locality with conditions entirely dissimilar, should be expected to become eminently successful, has long ago been proven to be a fallacy.

With regard to the "Mission" olive, its non-bearing behavior is easily understood. It requires, above all things, to be kept in as clean and thrifty condition as possible. The black scale must be freed from it, and the trees must be properly fertilized and cultivated. Once the tree becomes infested with the black scale the smut produced from the excrement of this insect will cover the breathing functions of both leaf and branch, and the tendency of the tree will then be to leaf growth instead of to fruit. The tree, however, may bloom profusely, but being sensitive to the fungus, the stems to which the flowers are attached become weakened, lose hold, wither, and drop before fertilization takes place. These natural conditions no doubt also apply with equal force to other varieties. Pruning to encourage the formation of fruit-bearing wood also becomes very essential.

Aside from the causes already mentioned, are the following reasons why the olive fails to produce a crop in paying quantities:

1. Unsuitable soil selection, not naturally well drained, having a stratum of "hardpan" or clayey, uncongenial conditions for roots too close to the surface. Soil not of ample richness, of too high or too low altitude.

2. Planting on sites too much exposed, without giving the trees protection by planting others to serve as windbreaks, etc.

3. The existence of a frost line. Frost during blooming period is very detrimental to the setting of the fruit, and in the fall and early winter to the fruit, especially during its tender period or first stages of ripening.

4. Planting varieties of indiscriminate selection, without regard to locality, adaptability, or the suitableness of stocks used, etc.

5. Planting trees too deep or too shallow, which everywhere has proved a grave mistake.

6. Planting too close. Trees, after becoming large, require abundance of soil of which there is not enough for the roots of all. Also, the shade from adjoining trees is very detrimental.

7. Lack of fertilizers—failing to supply the elements of nutrition needed to secure healthy growth of trees, that the particular soil may lack, whether in a virgin state or after the growth of trees has exhausted same.

8. Want of proper pruning, such as the trees may need under varying conditions, especially to encourage fruit-bearing wood.

9. Injudicious cultivation, such as cutting the fibrous roots just before a dry spell, or during blooming time.

10. Want of cultivation, allowing the weeds to grow, when the tree roots should have the soil to themselves, especially in dry weather, or allowing the soil to become dry after plowing, without breaking up the clods and pulverizing the ground.

11. Endeavoring to get two or more crops out of the same ground by growing other plants between and more or less close to the trees, which is detrimental to both.

12. Allowing the trees to become infested with the black scale, the fungus produced by the excrement of which clogs up the breathing pores of the tree and retards the growth of both tree and fruit.

APPLES.

The apple as a money crop is growing in favor each year, and the acreage in trees is steadily being extended and the output increased. In 1899 there was a great shortage in apples in the orchard districts of the East, in many sections the crop proving a total failure. This opened a market in the Eastern States and in England for California apples, and our crop was heavily drawn upon to supply this demand. Good prices prevailed and a footing was obtained in these markets which can be permanently held, fluctuating somewhat with the volume of fruit produced in the Eastern apple sections. The result of this has been to give renewed vigor to apple-growing and to very largely increase the acreage of this fruit on the Pacific Coast. It was long asserted, and even believed by Californians themselves, that good apples could not be produced here, but this belief has long since been exploded and some of the finest apples in the world are now being produced in our apple districts. These are found in the coast and mountain counties where the summer heat is not extreme, and where soil and climatic conditions alike are peculiarly adapted to the production of superior fruit. The apple-shipping season is not yet closed, but shipments up to October 25, 1900, were 256 carloads, principally from Santa Cruz and Sonoma counties.

Reports from the apple sections received at this office are all favorable and the crops this season have been a good average. It is pleasing to note that more interest is being taken in the production of this fruit, and more care in keeping the orchards and fruit free from pests. The codling moth is the one great drawback to apple-growing, but this is being steadily fought with the Paris-green remedy, which has been more generally used this season than ever before, and in consequence there has been a smaller percentage of wormy fruit than usual.

CHERRIES.

Cherries have been a good crop this season, and as a rule brought good prices. Late spring rains did some damage, but it was comparatively light, and fruit reached the market in good condition. In Santa Clara County the crop was especially good, Black Tartarians being remarkably fine. The first carload shipment of the season to New York was made from P. Lyon's Idlewild orchard in Vaca Valley, leaving on May 3d, and was sold in New York on the 15th, for account of the Earl Fruit Company as agent. The first ten-pound box put up at auction out of this shipment in New York was the cause of much friendly rivalry on the part of the dealers, and was finally knocked down to John Clarke, of Charles & Co., for $20, the highest price ever paid in New York for a single box of cherries.

PEACHES.

The first carload of fresh peaches for the season of 1900 left Vacaville on July 11th. Shipments of fresh fruits from that time increased rapidly until they bid fair to far exceed those of the previous year. An unusually good crop of peaches in Georgia, Delaware, and other peach-growing districts, however, came in competition with the California fruit, and prices and shipments rapidly declined. Canners offered $17.50 for fancy freestone peaches, and $22.50 for fancy clings, but these prices were not altogether acceptable, and many farmers dried their entire crops. The pack of dried peaches this season will exceed the average, although it is yet too early to get exact figures. The crop in the State at large has been fairly good, although somewhat spotted. In some sections excellent crops have been reported, in others the yield has been below the normal, while in the southern counties there has been a complete failure. The trees did not put forth leaves or blossoms until midsummer, owing to peculiar climatic conditions, and nearly all the fruit dropped from the trees before it was formed. The shipments of fresh peaches to the East totaled for the present season 1,374 carloads, against 2,608 carloads for 1899, a falling off of 1,234 carloads, due, as stated above, to the extra good crops of the Eastern peach districts.

APRICOTS. Apricots in most sections turned out very well, and yielded a very large crop. Owing to a shortage of rainfall, and overloading the trees, however, the fruit fell below the average in size. Early in the season canners fixed the price of $20 per ton for apricots running twelve to the pound. This offer was not acceptable to many of the growers, and in consequence a very large part of the apricot crop of the season has been dried, the quantity of dried apricots, therefore, being much heavier than the average. In Southern California the yield of apricots was much better than that of any other deciduous fruit, and in several localities a fair crop was gathered. The stock of 1899 apricots in the market was well out of hand before the new crop came in, and the result was a fairly active demand at good prices, dried apricots commanding from 6½ to 11½ cents.

Shipments of fresh apricots for the season of 1900 were 157 carloads, against 91 carloads for 1899.

PEARS. Pears have been an unusually large crop this season, and, as a rule, the fruit was of superior quality. Work against the codling moth, the great pest of both apple and pear, is being taken up more vigorously each season, resulting in cleaner fruit and better prices. In the season of 1900, spraying with Paris green was more general than ever before, and especial attention was paid to the quality of the chemicals used. A large part of the work of this office in the spring and early summer months consisted of making analyses of Paris green for fruit-growers in various parts of the State, and very many samples were rejected as worthless.

Shipments were very much heavier than last season, amounting to over 3,000 cars, against 1,684 for last year.

FIGS. A great advance in fig-growing has been made the present season by the successful establishment of the Smyrna fig wasp (*Blastophaga psenes*). For many years past efforts have been made to introduce into California the genuine fig of commerce—the so-called Smyrna. Special agents were sent to Asia to study it and to secure stocks and cuttings, and these have been introduced and tested, but all without avail. The aid of the Department of Agriculture was at last sought, and an expert was detailed to investigate the matter. A suitable propagating station was secured at Fresno, and for the past two years the insects have been carefully nurtured and watched. They have now been successfully carried over two seasons, and are apparently firmly established in California, and we may hope to add a new and important article to our fruit products in the Smyrna fig.

Fig growing and curing are rapidly on the increase in California, and each season sees the pack increased. This season's pack will be the largest ever put up here, amounting to probably over 300 carloads, of which amount 200 carloads will come from the San Joaquin Valley.

Figs ripened unusually early this season, being about two weeks earlier than last year. The fruit has been in good demand and prices satisfactory.

Shipments of Asiatic figs have been light this season, owing to an embargo placed upon them and other food products, due to the existence of the plague. As all danger from this source is over, however, the embargo has been lifted, but an increased demand for California fruit has resulted and the pack of dried figs this year is unusually heavy.

Prices rule as follows:

5 layers, 10-pound boxes	$0 60
4 layers, 10-pound boxes	80
3 layers, 10-pound boxes	90
In bulk, 4¾c pound.	

The following table shows the steady increase in the output of dried figs from California since the opening of the present decade:

	Pounds.
1891	360,000
1892	500,000
1893	900,000
1894	1,540,000
1895	2,750,000
1896	2,160,000
1897	3,250,000
1898	4,780,000
1899	5,800,000

WALNUTS. There has been a good walnut crop this year, and prices as fixed by the Association are satisfactory alike to growers and consumers, as large orders have been placed, and a very great percentage of the new crop was on the way to market soon after gathering.

In some sections the hulls of the ripe nuts did not crack freely and the nuts were not so rapidly gathered as in other seasons. The principal walnut section of the State is found in Los Nietos Valley, where soil and climate are particularly adapted to the cultivation of this nut, and where the growers have reduced its production to a science. There are seven coöperative associations of walnut-growers in Southern California: The Santa Barbara; Saticoy; El Monte; Fullerton; Los Nietos; Santa Ana, and Golden Belt. These associations handle about eighty-five per cent of the walnut crop, which will run up to over 500 carloads this season, and work harmoniously together. Their products are marketed through selected agents in Chicago, and all are sold f. o. b. at the starting point. Of the total product this year, 150 cars, or 30,000 sacks, will be handled by the Los Nietos and Riveria Walnut-Growers' Association. The prices fixed by the Association for this year's crop are 9½ to 10 cents for first-class nuts, with 2 cents less for seconds.

A new bleaching process, which is said to be very satisfactory and an improvement over the sulphuring process, has been tried at the Walnut-Growers' Association packing-house at Anaheim, this season. The nuts are dipped for ten seconds in a solution made of twelve pounds of bleaching powder, twelve pounds of sal soda, and fifty gallons of water. The nuts are bleached perfectly, and the process costs about a third of the old sulphuring method. The new method is likewise much more expeditious. The nuts are run through the grader, where they are graded into firsts and seconds. From the grader they are taken into receptacles made of wire netting and precipitated into the bleaching solution. They are permitted to remain in the solution for ten seconds. The operator counts ten slowly while the nuts are immersed and lifts the nuts and plunges them into clean water. Then they are spread in the sun, the bad nuts picked out, and are subsequently placed in trays and wheeled to the warehouse to await sacking.

ALMONDS.

Closely allied to the peach is the almond, which it resembles so much in leaf, wood, and blossom that it requires considerable knowledge of their habits to distinguish one from the other. Some authorities claim that the peach with its luscious fruit is an offshoot from the almond. However that may be, the almond is valued for its seed, which is edible and in great demand by confectioners and others. The almond is little more than a pit surrounded by a thick, dry, woolly skin.

Almond culture has received considerable attention in this State. The tree does well on land such as is suitable for peach-growing. It is a good bearer if the right varieties are selected, requires but little care, and gives good returns. There is a good market for the product, as is evidenced by the fact that California nuts bring more than those imported.

One of the reasons why the almond was not more largely cultivated is that a variety known as the Languedoc (a French species), which had been generally planted, did not prove itself a profitable bearer. New varieties (seedlings) have been originated in this State, however, that are reliable and which yield certain crops, are very prolific, and the nuts of which are superior to the foreign varieties. This being demonstrated, the California almond is now replacing the foreign article, and the million or more dollars now annually sent to Europe to pay for these nuts should be devoted to the upbuilding of the State.

The popularity of the California almond lies in the fact that its kernel is perfectly smooth and has pulp qualities which are required by confectioners, who consume a very large proportion of the almonds produced and imported into the United States.

Almond-growing presents many advantages, especially to the beginners in fruit-growing. There is little to be learned about the business. The tree will bear much neglect, but repays careful treatment. No art is required in either gathering or curing the crop; the trees bear young and bring early returns for the investment, and with the proper varieties and favorable conditions the crop is a profitable one.

The cultivation of the almond is easier than that of any tree, unless it be the prune. The orchard is plowed and harrowed once or twice a year, and then the weeds are kept down in any way the grower chooses. The amount of work required to do this depends on the weather, and is just the same for almonds as for other trees. But the almond tree is pruned but little. The nuts are never thinned on the tree, as the peach and apricot must always be to produce a crop of good fruit.

First to bloom in the spring, the almond is last to mature in the fall. The whole spring and summer long it hangs there, a green peach for all the world, and after the first few weeks never increasing in size or changing in appearance. The seam is deeper than in most peaches, but not deeper than in the ripe apricot. Late in August this seam will be seen to have opened in a few of the earliest. The grower's anxiety now reaches its climax. Will his almonds open and remain opened until harvested, or will the drupe remain closed, or only partially open and then close tight again? The whole profit of the crop may depend upon this question.

Methods of picking and husking the almond differ, and many home and patented devices are brought into use. The task generally lasts from September to the last of October. The boxes containing nuts picked each day are gathered and conveyed to the drying-yard, where the nuts are sun-dried for a few days. Then comes the bleaching, which requires care and experience.

Cured ready for market, the nuts are stored or shipped in coarse gunny sacks. The almond, most precious by weight of all orchard products, involves the least labor, care, anxiety, expense, and skill of all.

Propagation.—The almond is propagated in the same manner as the peach. For grafting or budding, almond stock is preferable, although peach stock is good. The apricot is to be avoided. Experience has proved that the almond and the apricot will not make a good union and they are liable to break before the first wind. The trees may grow rapidly and present a healthful appearance, sometimes attaining a diameter of two or three inches before they separate, and the orchardist finds his care, labor, and patience gone for nothing. Occasionally the almond and apricot will unite, but the chances seem so much against it that the risk is to be avoided.

Soil.—The almond prefers a light, sandy soil, warm and well drained. They will not grow in water nor do well in heavy, poorly drained land. Soils not rich enough to produce peaches, apricots, or cherries will grow good almonds.

* "The almond will do better on a thin dry soil than will any other fruit tree; but when given the richest black loam and the right amount of water, it will produce double what it will on a dry soil. It is a sure thing to say that the almond will thrive and bear good crops on any soil that will grow good peaches. The tree cannot withstand a large amount of water, but, on the other hand, it will thrive and bear good crops on a dry soil which would not support a peach tree."

The almond is adapted to most localities of the State, but attains its best growth away from the fog regions of the coast, and in the interior valleys. Considerable prejudice existed at one time against it, owing to the uncertainty of the Languedoc, and it became accepted as a fact that the almond was suited to but a few favored localities of California. Since the origination of many of our profitable seedling varieties, however, this prejudice has died out, and it is admitted that the almond has as wide a range in our State as has the peach. It may be set down as a rule that where soil and climate are best adapted to the peach, the almond will flourish, provided that good judgment is used in the selection of varieties.

Preparation of the Soil.—The almond so much resembles the peach in its general habits that all that has been said regarding the preparation of the land for that fruit applies equally as well to this. Thoroughness at the beginning should be the rule, for it must be borne in mind that after the orchard is planted as good results cannot be attained. The trees should be planted at not less than twenty-four feet apart, and thirty is even better. They have an upright and spreading habit and require considerable room.

Almonds, to pay the grower, should bear well every year, hull easily, have clean, thin, soft shell, and a bright, plump kernel. They do better out of the fog than in it. Almond trees should be as young as possible when transplanted from the nursery. Large trees are objectionable, even if only one year from bud. The best success attained has been from one-year-old buds. They should be pruned the three first years to form the tree, then only to thin out objectionable branches. Summer pruning is to be avoided.

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* By Webster Treat, of Davisville.

Cultivation.—Less attention is required by the almond than by most of our fruit trees. The land should be well and thoroughly cultivated, and no weeds permitted to gain a footing. In our leading almond orchards the cultivator is used from three to five times in the season, following a thorough plowing in the spring, and the surface of the soil is kept well pulverized. No thinning is required as in the case of other fruit. The nuts are light and the trees not inclined to overbear. In fact, the almond needs but little attention, as compared with other trees, in either pruning, thinning, gathering, or caring for the fruit.

*Pruning.**—"After being planted the almond tree requires so little care or attention that there is but little to be said on this part of the culture. It requires only pruning enough to give it shape. After that point is made, no pruning at all is necessary, except to keep the tree from getting too thick at the top and to keep any suckers out. After transplanting, I cut the tree to three feet above the ground and grow limbs from as low on the trunk as they will start, and up to where cut off. Never shorten in, as with the peach and apricot, for the almond is like the prune, bearing its largest crops on the long, slender branches. But it also bears nuts on the little short twigs on the inside of the tree. These inside twigs do not die out as in the peach and apricot, but live and get more stubby and strong, bearing almonds every year; and because of the tree bearing a part of its crop close against and around the larger limbs, it is desirable to grow as many limbs as possible. This gives more limb surface for the small bearing twigs, and also tends to keep the tree nearer the ground."

*Gathering and Curing.**—"The process of gathering almonds and preparing them for market is very simple. When the hulls are opened pretty well, disclosing the nut, which is about the first of October, a large canvas sheet is spread under the tree and the limbs are struck sharp blows with poles until all the nuts are shaken off. These poles are of the straightest grained Oregon pine, about fifteen feet long, and one and a quarter inches square, with the edges rounded off a little. This striking of the limbs with the poles does not injure the tree at all, and it hulls a portion of the nuts. After gathering, the almonds are put through the hulling machine. It consists simply of an iron or wooden draper run by steam or horse power, carrying and rubbing the unhulled nuts against a stationary top-piece, which fits down just close enough to the draper to allow of the nuts passing through without breaking. This rubbing and chafing takes the hulls off, and then the nuts are separated from the hulls by hand. After the almonds are separated from the hulls, the nuts are bleached by the sulphur fumes. My bleaching house is about twenty-five feet by eight feet, and I generally put in about four thousand pounds at one time and expose them to the fumes of the sulphur for three or four hours, though the longer the nuts are bleached, the whiter they become. Usually in bleaching soft-shells a little water is sprinkled over them before being put in the sulphur house, for the purpose of making them completely burn, for if too much sulphur is put in at one time there will not be a complete combustion, and the soft-shells will smell of the sulphur, and the paper-shells will taste of it."

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*By Webster Treat, of Davisville.

Pests.—The principal pest of the almond tree is the red spider, or mite. This insect is very small, so small that it can hardly be seen without the aid of a glass. They attack the leaves and limbs mostly, but also get on the fruit. The best remedy for this is dry sulphur. Our leading almond-growers apply it with a machine similar to that used for sowing wheat. The sulphur is placed in the hopper and the wagon with the machine driven between the rows of trees, when the sulphur is thrown out in a cloud of fine dust, and settles on the leaves and twigs. Four rows—two on each side—are sulphured at one time, and it has been found the most effective treatment for this pest.

Other remedies—strong caustic solutions (lime, sulphur, and salt wash) applied during winter, and the summer remedy given below—have practically exterminated this pest on deciduous trees:

Summer Remedy.

Sulphur	3 pounds.
Caustic soda (98 per cent)	2 pounds.
Whale-oil soap	25 pounds.
Solution (in all)	100 gallons.

Directions.—Boil the sulphur and caustic soda together in about two gallons of water. When the sulphur becomes dissolved, add the soap, and boil until thoroughly dissolved; then add water to make in all one hundred gallons of solution, and apply warm.

This season the almond crop has proved a very fair one, and some 250 carloads will comprise the State's production, although it would have been much larger had it not been cut down by frosts. The crop is marketed as a whole, the almond-growers being organized into an association for the purpose of packing, grading, and marketing their product on the coöperative plan.

ACREAGE OF FRUIT IN THE STATE.

The following are the number of trees and acreage in fruit in the State, compiled from Assessors' reports to the State Board of Equalization:

Kinds.	Bearing Trees.	Non-Bearing Trees.	Total Trees.	Total Acres.
*Apple	1,029,582	547,214	1,576,796	22,852.1
*Almond	1,001,009	602,476	1,603,485	23,238.9
*Apricot	1,628,834	1,116,076	2,744,910	39,781.3
*Cherry	394,836	179,794	574,630	8,327.9
**Fig	135,007	81,059	216,066	4,501.4
**Olive	364,811	1,797,929	2,162,740	45,057.0
*Peach	3,285,597	2,236,370	5,521,967	80,028.5
*Pear	987,921	532,035	1,519,956	22,028.5
*Prune—French	4,500,313	2,721,659	7,221,972	104,666.3
*Prune—Other kinds	507,986	342,885	650,871	12,331.4
*Lemon	263,240	642,502	905,742	13,126.7
†Lime	250	100	350	3.2
*Orange	1,683,885	1,968,569	3,652,454	52,934.1
††Walnut	255,843	279,918	535,761	19,843.0
*Plum	7,632	4,406	12,038	174.4
*Nectarine	15,625	257	15,882	230.2
†Quince	4,988	692	5,680	52.6
**Pomelo (grape-fruit)	2,233	22,227	24,460	509.6
†Miscellaneous	123,284	133,243	256,527	2,565.3
Totals	16,192,876	13,209,411	29,402,287	452,252.2
Grapes—Wine, raisin, and table				157,000

*Averaged 25 feet apart. **Averaged 30 feet apart.

†Averaged 20 feet apart. ††Averaged 40 feet apart.

Assessors' returns are considered too low to be strictly accurate, twenty per cent additional being conceded nearer correct. With this addition the total acreage is as follows: Bearing trees, 19,431,451; non-bearing trees, 15,851,293; total trees, 35,282,744; total acres, 542,702.6.

REPORTS

OF

ALEXANDER CRAW,

HORTICULTURAL QUARANTINE OFFICER.

HORTICULTURAL QUARANTINE REPORTS.

By ALEXANDER CRAW,
State Horticultural Quarantine Officer.

To the Honorable the State Board of Horticulture:

GENTLEMEN: Since my last report (April 15th), one hundred and twenty-two steamships and sailing vessels arrived in the port of San Francisco that had trees, plants, or fruit from the following countries: China, Japan, Ceylon, Australia, New Zealand, South Sea Islands, Philippine Islands, Hawaiian Islands, Central America, Mexican ports, and British Columbia. The receipts consisted of 314 cases and crates of trees and plants, 573 boxes and bundles, and 149 loose lots (the latter numbering from one to fifteen plants in each lot), and 864 crates and sacks of pineapple plants (for Florida). In fruits we had 10,809 boxes of limes, 3,054 boxes of Japanese Unshiu oranges, 100 crates and 10 boxes of oranges from San José del Cabo, Lower California, 8 cases (equal to 16 boxes) of oranges from Mexico, 2,360 boxes of mangoes, alligator pears, tomatoes, etc., and 2,367 crates of pineapples; 3,302 fruit trees and ornamental plants were destroyed. Other stock has been thoroughly inspected and fumigated.

Receipts by rail have been light. As formerly, the Southern Pacific Company has advised us of the arrival of trees and plants from outside of the State.

Peach stock is very scarce in the nurseries of California for this season's planting. In consequence, we have had considerable correspondence regarding the law and State Board regulations relating to the purchase of such trees in other States. We cannot exercise too much precaution in ordering peach trees, to see that they are not grown in "peach yellows" or "peach rosette" districts. These two destructive diseases are not the only serious drawbacks to peach culture east of the Rocky Mountains. According to the Year Book of the United States Department of Agriculture for 1898, page 652, "A new disease known as 'little peach' has appeared in Michigan, and has already caused a loss of nearly $300,000. The entire peach industry of Michigan, representing nearly $10,000,000, is threatened." In the South and a number of the Eastern States we know of the existence of insect pests that are almost as destructive to peach trees as the above diseases.

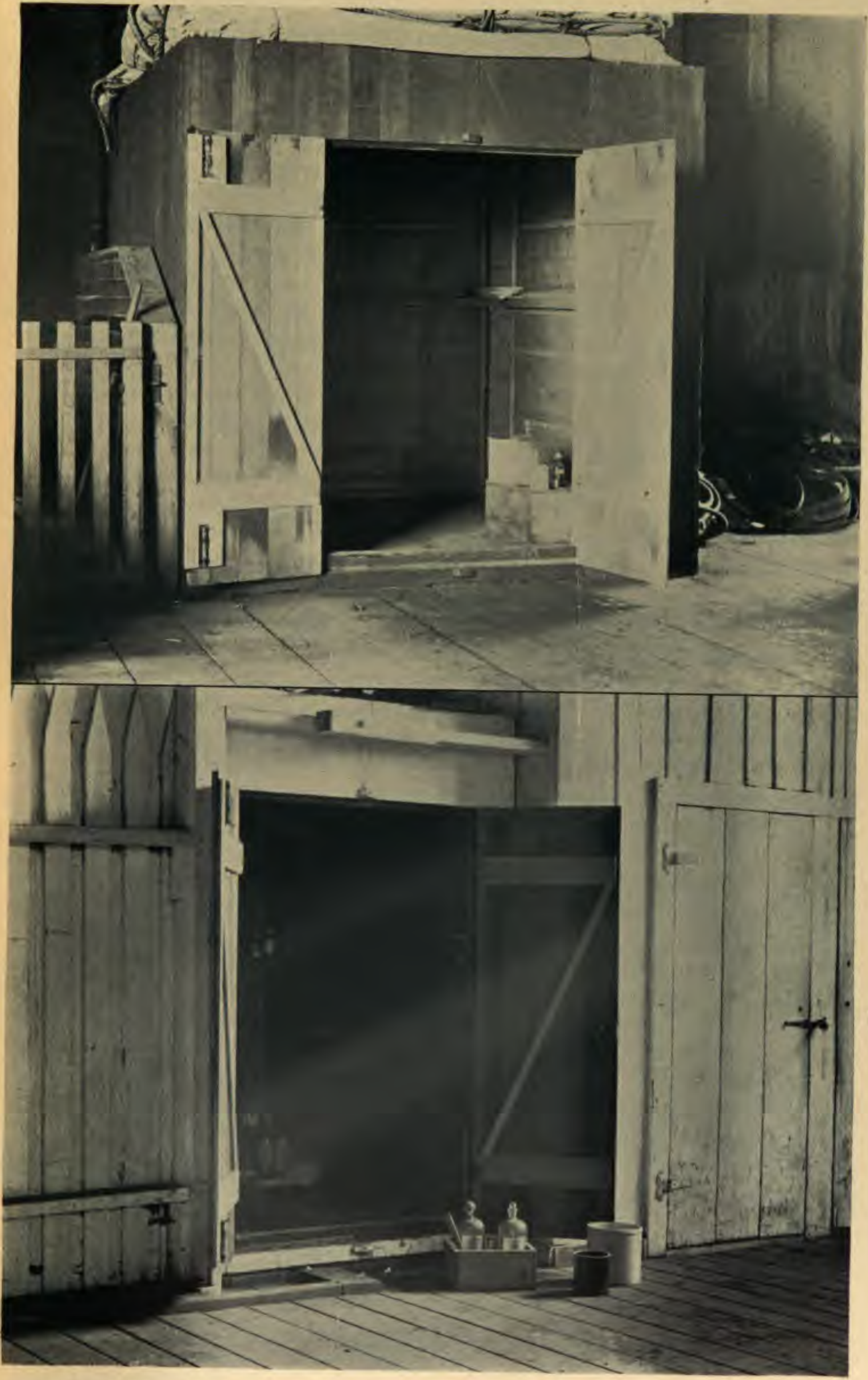
Several of our correspondents consider our laws and regulations an imposition and an injustice to Eastern nurseries, but as these measures were drawn up for the protection of California's vast orchards, they were not likely to contain sections that would enable disinterested or unscrupulous individuals to send diseased or pest-infested nursery stock.

As formerly, trees and plants infested with insects new to the State have been destroyed. During my absence in the southern counties, Mr. Isaacs stopped and destroyed a mongoose that was brought on one of the transports. The danger to the State from the introduction of such animals was shown in my report of May, 1896.

In my last report to you, I called your attention to the seizure and destruction of a shipment of fresh cucumbers last February from Honolulu that was infested with the cucumber and melon maggot, a pest that destroys seventy-five per cent of their melons, cucumbers, and squash. It was comparatively a recent pest on the Islands, and no one appeared to know whence it came. I believe that it was taken into Honolulu from Japan, for on July 26th the steamship "Umatilla" arrived from Victoria, B. C., and a Japanese passenger from Japan, via Victoria, brought a box of cucumbers done up in cotton. Upon inspection I found them infested with the same pest. I sent notice of the danger to the quarantine officers in Oregon, Washington, and British Columbia.

Last May, in company with County Commissioner Ed M. Ehrhorn, of Mountain View, Santa Clara County, we collected probably one hundred thousand *Comys fusca*, the internal parasite of the "brown apricot scale" (*Lecanium armeniacum*). This was done by clipping twigs from prune trees infested with the above scale. Mr. Ehrhorn had placed these parasites in the orchards two years previous, and on the occasion of my visit fully ninety-eight per cent of the scales contained parasites and were killed before producing their eggs. Dr. L. O. Howard, United States Entomologist, on his visit here, took infested twigs with him to Washington. He afterward wrote me that every scale without exception contained a parasite. Colonies of these parasites were sent to Napa, Sonoma, Tulare, Kern, San Benito, and Alameda counties. The commissioners of the latter county, however, did excellent work in collecting and placing strong colonies in all infested orchards in their districts.

Commissioner William Barry, of Niles, deserves credit for the effectual manner in which he has propagated and distributed the "black ladybirds" (*Rhizobius ventralis*) sent him by your Board. I am not aware that a single orchardist in his district now sprays or fumigates, on account of scale insects. They have implicit confidence in parasites. Aphis on prune and walnut trees have been troublesome in some districts. Mr. Compere has forwarded from Honolulu ladybirds that prey



FUMIGATING ROOMS AT OCEANIC AND PACIFIC MAIL DOCKS, AT SAN FRANCISCO. HORTICULTURAL QUARANTINE, STATE BOARD OF HORTICULTURE.

upon aphis, and these have been sent to Alameda, Santa Clara, Los Angeles, Santa Barbara, and San Diego counties. Some were also liberated in Golden Gate Park, San Francisco. It is to be hoped that they will increase and do good work.

The "purple scale ladybird" (*Chilocorus circumdatus*) that Mr. Koebele so successfully introduced from China into Honolulu, H. I., although very strong, healthy colonies were sent here by Mr. Compere on both of his missions to the Islands, I am sorry to say that after a careful examination in November of the orchards in Los Angeles and Santa Barbara counties, where they were placed, I failed to find any evidence of them. Mr. Koebele was so very enthusiastic over this ladybird that I hope we will yet be successful in establishing it.

Mr. Compere sent a small consignment of young "black scale" from Honolulu that contained very small internal parasites. Mr. Compere observed that the "black scale" (*Lecanium oleæ*) was very rare on the Islands, and upon investigating for a reason, he found that the young of this scale was subject to the attack of this minute parasite. I bred three small colonies from the material he sent, and they were liberated in Alameda and Santa Barbara counties. Should we succeed in establishing them, colonies will be placed in the more interior counties where this scale is troublesome and where the *Rhizobius* have not increased as rapidly as we would like to have them.

In the citrus-growing district about Lindsay, Tulare County, an alarming outbreak of the "cottony cushion scale" (*Icerya purchasi*) was subdued by the *Vedalia*. County Commissioners I. H. Thomas and J. H. Bearss made applications for colonies of *Vedalia*, which were sent them. By careful propagation and distribution of the ladybirds, they have now got the scale under control.

The danger of introducing a pest into a district by people not conversant with such work is well illustrated by the introduction of the "cottony cushion scale" into Hillsboro County, Florida, a few years ago. An orchardist of that county had learned of the work of the *Vedalia* in California, and thought it was a panacea for every pest that attacks an orange tree. His trees were infested with the "purple scale," so he wrote to one of the County Boards of Horticulture south of the Tehachapi Mountains, and requested them to send him a colony of *Vedalia cardinalis*. They supposed that his trees were infested with the "cottony cushion scale," and so mailed him a colony and put in some scales for food on the way, and thus established the *Icerya* in the Florida groves. In applying for a colony of *Vedalia* last May, Prof. H. A. Gossard, of the Experiment Station, Lake City, Florida, wrote: "That the 'cottony cushion scale' had then scattered over an area contained within a radius of some five to seven miles around Clear Water Harbor." Three colonies of *Vedalia* were sent to Florida. I have not yet learned what success they have had.

The Department of Agriculture, Washington, D. C., through Dr. Howard, made application last May for a colony of *Vedalia* to be sent to George A. Bishop, Public Gardens, Bermuda, as the *Icerya* was introduced there and spreading. The insects were sent.

Through the Board's work in propagating this and other ladybirds for the benefit of the fruit-growers of the State, the following countries have also received the benefit of your enlightened policy: Cape Colony, South Africa, Egypt, Madeira, Portugal, Hawaiian Islands, and Samoa.

On November 19th the steamship "Colon" arrived in port from Central America and had 8 cases (equal to 16 boxes) of oranges from Acapulco, Mexico. The following day the freight was unloaded, and upon examination we found some of the oranges to be infested with that much to be feared pest, the "Morelos orange maggot" (*Trypeta ludens*). The shipment was seized and cremated. Some of the oranges contained from three to fifteen maggots from an eighth to nearly half an inch in length, of a pale yellowish color, very much like the pulp, and giving but slight external indication of their presence. Specimens of the maggots were placed in ninety-five per cent alcohol, and a most remarkable instance of insect vitality was demonstrated. The maggots were completely submerged in the alcohol, but the first to succumb was after they had been in twelve minutes, and at the end of forty-two minutes some had still sufficient strength to raise their heads as if in an effort to escape. The nature and character of their food in the first stage of their existence may account in a measure for such wonderful vitality. In future, no oranges will be admitted from there.

Samples of the infested oranges were placed in exhibition jars and a five per cent solution of formaline was poured over them. Specimens of the maggots in vials were sent to the County Boards of Horticulture of those counties where oranges are principally grown in the State.

The only safety to the citrus industry of the United States is for the Government to prohibit by law the importation of oranges from Mexico.

DECEMBER 8, 1899.

To the Honorable the State Board of Horticulture:

GENTLEMEN: I herewith submit my semi-annual report. Of the steamers and sailing vessels that arrived in the port of San Francisco during that time from foreign countries, 103 had trees, plants, or fruit on board. These consisted of 176 cases of trees and plants, 93 boxes, baskets, and bundles of trees and plants, and 105 loose lots; 9,243 boxes of citrus fruits, principally limes from Mexico and Unshiu oranges from Japan; 820 crates of pineapples; 5,865 boxes of miscellaneous fruits. No more oranges from the "orange maggot" districts of Mexico have been received as freight; all such fruit in the possession of passengers and crew has been confiscated and destroyed. On December 30th, the steamship Acapulco arrived. A passenger had two boxes of fruit. In the center of one box were two dozen oranges covered with bananas. We found several oranges infested with the Mexican orange maggot (*Trypeta ludens*), so all were destroyed. As a result of the destruction of the shipment of oranges frem Acapulco, referred to in my last report, the Mexican Government has issued a circular to the State Governors urging them to use all possible means to extirpate the pest from their respective States. The circular reads as follows:

> MEXICO, January 18, 1900.
>
> The Horticultural Board of the State of California, having discovered the presence of maggots in the Mexican orange, has prohibited the introduction of that fruit from Mexico into said State, and has ordered that all consignments of oranges from Mexico be destroyed upon their arrival. This measure, which has been adopted on account of the fear that the pest may spread to the California orange groves, has attracted the attention of the press of that State, which has sounded the note of alarm, suggesting that the American congress take up the matter and pass laws to prevent the importation of fruits and plants that are tainted with insect or other pests that are capable of being propagated.
>
> This department considers it unnecessary to enter into consideration in regard to the harm that will accrue to Mexican trade in general, and especially to the growers of fruit, if they are excluded from the important market of the United States; your well-known enlightenment will easily enable you to appreciate the extent of the damage.
>
> This department being desirous of contributing, to the extent of its powers, toward warding off an evil of such magnitude from the planters of the country, has deemed fit to address this circular to you, urging upon you the necessity of apprising all growers of the fruit in question of the steps taken by the Horticultural Board of California, and of encouraging them by all possible means to extirpate this pest which has justly alarmed said board.
>
> Until such time as Mexican growers can attain positive results in said direction, this department is of the opinion that, in their own interest, they should abstain from exporting oranges which show external signs of having been attacked by the dreaded insect. All the precaution that can be taken for that purpose will be amply compensated in the future.
>
> I forward you copies of three articles published in Nos. 9, 10, and 11 of Volumes VII and VIII of the "Fruit World" of Los Angeles, in order that by such means as you may consider suitable, you may secure their profuse circulation among all interested parties in the State which you so ably govern.
>
> FERNANDEZ LEAL.

Your special agent, George Compere, writing his observations from Fiji, says:

> The Fiji Government is now negotiating with the agents of the Oceanic Steamship Company to have the steamers of that line call at Fiji ports to and from Australia and California. Should they do so there will be great danger to the fruit interests of California, mango fruit being very badly infested with the maggots of fruit flies. We bred two species of flies from various fruits, and were informed that eighty per cent of their oranges became infested with maggots. The new crop is just setting up, so we are unable to say what fly infests their oranges.

Mr. Compere, writing from Queensland regarding the ravages of the "Queensland fruit fly" (*Tephrytis tryoni*), says:

> The growing of deciduous fruit in Queensland is a thing of the past. It made me sick at heart to see the destructive work of this pest; not a peach, plum, prune, or apricot is allowed to escape its attack.

On Sunday, April 22d, the steamer "Umatilla" arrived from Victoria, B. C. In her freight was a crate containing seven pomelo trees from China, for an orange-grower of Azusa, Los Angeles County. As the trees were infested with that injurious, small, black, armored citrus scale (*Parlatoria zizyphus*), they were stopped and destroyed. This scale is not found in the orchards or gardens of the State. It was introduced into Honolulu, and some orange trees there are completely covered with it. It belongs to the same genus as the "chaff scale" of Florida. A few "purple scale" (*Mytilaspis citricola*) were also found on the trees.

Land Crabs.—On December 30th the Bessie K. arrived from Clipperton Island. A passenger had a box of live "land crabs." When alive they are an orange red color—the same color as an ordinary crab when cooked. The owner stated that he intended presenting them to the universities of Berkeley and Stanford. As this species is known to confine itself to land, and prefers a vegetable diet, I considered that they would be safer dead, and just as valuable for specimens, so killed them with chloroform.

Deciduous Trees, Etc.—The scarcity of deciduous fruit nursery trees the past winter in California resulted in unusually heavy importations from Oregon and east of the Rocky Mountains. The County Horticultural Commissioners and inspectors have been notified of the arrival of such stock in their districts by the railroad agents. The introduction of such trees without inspection and disinfection is a positive danger to the State, yet there are one or two counties where the Supervisors have been petitioned by the orchardists to appoint commissioners, and have failed to comply with the law. The introduction of one serious pest into their orchards would require an annual expense to combat it much greater than it would to guard against its entry.

African Parasite of the Black Scale.—Through the efforts of Ed M. Ehrhorn of Mountain View, and the Hon. S. F. Leib of San José, United States Senator George C. Perkins called upon Secretary Wilson and requested that he use his influence with the Secretary of Agriculture of the Government of Cape Colony to try to send to California living specimens of *Aphycus lounsburyi* and *Scutellista cyanea*, both internal parasites of the "black scale" (*Lecanium oleæ*). On June 13th Mr. Ehrhorn received, through the Department of Agriculture, two boxes of twigs slightly infested with black scale. He notified me of their arrival and requested me to visit and consult with him regarding their treatment. Some of the parasites, *Scutellista cyanea*, had issued from the scale, and were very lively, and more since have developed. Mr. Ehrhorn has placed colonies in several orchards infested with black scale and under favorable conditions for their propagation. Besides, he has some in confinement. Professor Charles P. Lounsbury, of Cape Colony, claims that the above parasites keep the "black scale" in check in that country.

Mr. Compere has discovered a most important internal parasite of the black scale at Brisbane, N. S. W. He writes:

> This is the parasite that we have been looking for. Arriving at Brisbane, I noticed that the oleander trees were free from black scale. I at once made a search to ascertain if possible what was responsible for the absence of that pest, for certainly the climatic conditions are very favorable for it. On making an examination of all the trees met with, I soon discovered that it was the work of an internal parasite. The majority of the scales had two and three holes in their backs and some with four or five holes.

The few scales on the trees were not sufficiently developed to be parasitized, so he visited other sections and returned later. Since then I have received from him two shipments of infested twigs from which the small parasites have recently been issuing. Through the kindness of the California Nursery Company of Niles, in furnishing me with oleander plants in pots, I have been enabled to keep the Brisbane parasites indoors to guard against the possible introduction of any secondary parasites that may exist on the imported parasites.

I stocked the oleander plants with young black scale, also eggs, and they are now very thoroughly infested. Each plant is placed in a large glass jar, covered with silk. The oleander branches sent by Mr. Compere I have inserted in glass tubes containing some water, and to prevent the little parasites from accidentally falling into the water, I have stopped the mouth of each tube with sphagnum moss, and placed them in large glass breeding jars; these are also covered with silk, and as the parasites develop, they are transferred to other jars.

In this way the material will keep fresh until the parasites all mature. If the internal parasites that breed in the half-grown black scale collected by Mr. Compere at Honolulu, and liberated in this State, establish themselves, together with the other species and *Rhizobius ventralis*, we will be in a position, I hope, to keep this pest under control.

Enemies of the Cottony Cushion Scale.—The *Vedalia cardinalis*, with the aid of *Novius koebelei* and *Lestophonus iceryæ*, has practically exterminated the cottony cushion scale from the orange and lemon groves of the State. But there are a number of trees and plants that, when infested with the scale, remain as breeding places for the pest, as the insects mentioned will not breed on the scales. This is probably caused by the flavor imparted to the scales by such trees as laburnum, broom, maple, some pittisporum, and other plants.

The recent discoveries made by Mr. Compere may in a measure offset this. One is a black *Vedalia*, a few of which reached us alive. These were placed in a breeding jar, and now I have a good supply. Colonies will be distributed after the next hatching. Another species has an irregular diamond-shaped mark on each elytron. This species as yet has not increased as freely as the black one.

The most wonderful parasite yet found for this scale, in my opinion, is an internal chalcid fly (*Ophelosia crawfordi*). When Mr. Compere sent these few scales, he wrote: "I am sending you a few cottony cushion scales that contain maggots. Breed them and see what they are."

They were placed in a breeding jar on May 7th, and May 18th they began to issue. On that date I placed some fresh twigs infested with *Icerya* in a breeding jar, the bottom of which was covered with damp sphagnum moss, and in this jar I placed the few parasites. Forty-six days afterwards the jar was alive with the active little parasites. I have prepared other colonies, and after the next hatching I will liberate colonies in different counties so as to establish them in the State.

The Grasshopper Parasite.—I am pleased to report the successful importation of the dipterous parasite of grasshoppers or locusts. Mr. Compere, your special agent, made a side trip of 500 miles in New South Wales to secure these parasites. He could only find a few grasshoppers, and those he sent. On his return, and before he reached Sydney, the hoppers were dead, even with food in the box. He had the package placed in the steamer refrigerator, and forwarded to San Francisco with other beneficial insects.

The shipment reached the office on May 7th. I placed the dead hoppers in a breeding jar. A few flies of the genus *Gaurax* issued a few days after. On June 11th a few of the true parasites made their appearance in the jar. I telegraphed to Horticultural Commissioner William Barry of Niles as to the prospects of finding grasshoppers in the Livermore Valley, and he wired me to be sure and take them there.

A. D. Pryal, a member of the Board of Horticultural Commissioners of Alameda County, accompanied me by rail to Livermore. We drove out to the uncultivated districts, where locusts prefer to deposit their eggs. There we were so fortunate as to find the locusts had hatched and some nearly full grown. Here the parasites were liberated. I made a small opening in the silk cover of the jar, and as they issued, I counted them, and found that fifty-nine perfect flies were in the colony. The vineyards of Livermore and other sections of the State are frequently raided and stripped of their leaves and berries by grasshoppers. I consider the Livermore Valley one of the best localities in the State for the establishment of such insects, as there is a good range where they can spread over into the San Joaquin and Sacramento valleys.

This parasite belongs to a group of parasitic flies, all the members of which prey upon other living insects. Each species confines its attack to its own particular pest. Thus, this species will only deposit its eggs on grasshoppers; there are other species that prey upon certain classes of beetles, and others on butterfly and moth caterpillars and chrysalides.

It is a well-known fact that without such friendly aids, certain insects would cause great destruction of crops. I will make several visits to Livermore and capture some grasshoppers to ascertain if the parasites have established themselves.

J. P. Buggy, of Corowa, New South Wales, is the gentleman who has the credit of first calling attention to this parasite. A. M. Lea, entomologist of Tasmania, when in New South Wales, made a very thorough and careful investigation into the work of these parasites, and stated to Mr. Compere that he found ninety per cent of the female locusts were parasitized and fifteen per cent of the males. As you are aware, you have been endeavoring for the past nine years to secure living specimens of this parasite.

Colonies of the *Vedalia cardinalis*, from our breeding jars in the office, have been sent out this spring. In May, 1899, four colonies were sent to the Commissioners of Tulare County to check an outbreak of cottony cushion scale at Lindsay. This spring County Commissioner J. T. Bearss kindly sent us several strong colonies early in the season that materially strengthened our winter colonies for propagation.

Parasites.—The work of the internal chalcid fly, *Comys fusca*, on the brown apricot scale (*Lecanium armeniacum*), in the prune and deciduous orchards, has been so effective in Santa Clara County the past season that I was unable to collect them in that county. Commissioner Barry of Niles had successfully established the *Comys* in a number of orchards in his district, and during June I collected and distributed to other counties that have the "brown apricot scale," thousands of these useful parasitic flies. I find that colonies are now established in Napa, Sonoma, Tulare, and San Benito counties from insects we sent last year. Dr. L. O. Howard, when here two years ago, took infested twigs to Washington and wrote me that every scale was parasitized. You can see that it is a most important parasite of this serious pest.

Cabbage Butterfly.—The European cabbage butterfly (*Pieris rapæ*) was introduced into the Eastern States many years ago (in 1856), and was a troublesome pest in Los Angeles County a few years since, but is not so plentiful now, owing to the attacks of two parasites; one is a Tachina fly, and the other, a small hymenopterous parasite; both work in the butterfly chrysalis. This pest is found in all of the bay counties, so I wrote to Commissioner E. H. Rust of Los Angeles, requesting him to send me a supply of the chrysalides, so as to secure the *Tachina* parasite. Mr. Rust detailed one of his inspectors, Fred Masken of Long Beach, to collect and forward the insects, which he kindly did. I was very much surprised to breed from the material he sent, hundreds of small hymenopterous parasites that were new to me. I sent specimens to Dr. L. O. Howard, and he kindly identified them as *Pteromalus puparum*, an enemy of the cabbage pest. The parasites have been liberated. We do not look for extermination, but they do reduce the numbers of the pest, so that cabbages are not as completely riddled by caterpillars as formerly.

Orcus Australasiæ.—Mr. Compere forwarded a good supply of *Orcus australasiæ* from Tasmania. The markings on this lot were of a duller orange red than those from Australia. Colonies of these were sent to San Diego, Santa Clara, and San Mateo counties. Possibly this one, coming from a cooler country, may breed more rapidly.

Packing Ladybirds.—Mr. Compere has adopted a system of packing mature ladybirds that reduces the loss to not more than three per cent. He crushed some dried dates to the inside of the box cover, and covered that with a piece of mosquito netting. The sugary moisture from the dates appears to sustain the insects in their long voyage across the ocean. Of course, they are placed in the refrigerator to keep them in a hibernating condition.

New Coccids.—Since my last report the following new coccids have been found on trees and plants entering the State. They were kindly determined for me by Professor Theo. D. A. Cockerell: *Pseudolecanium tokionis*, Ckll.; *Asterolecanium variolosum*, Ckll.; *Aspidiotus cryptoxanthus*, Ckll.; *Aspidiotus lataniæ*, Sign.; *Antonina crawi*, Ckll.; *Lecanium cerasarum*, Ckll.

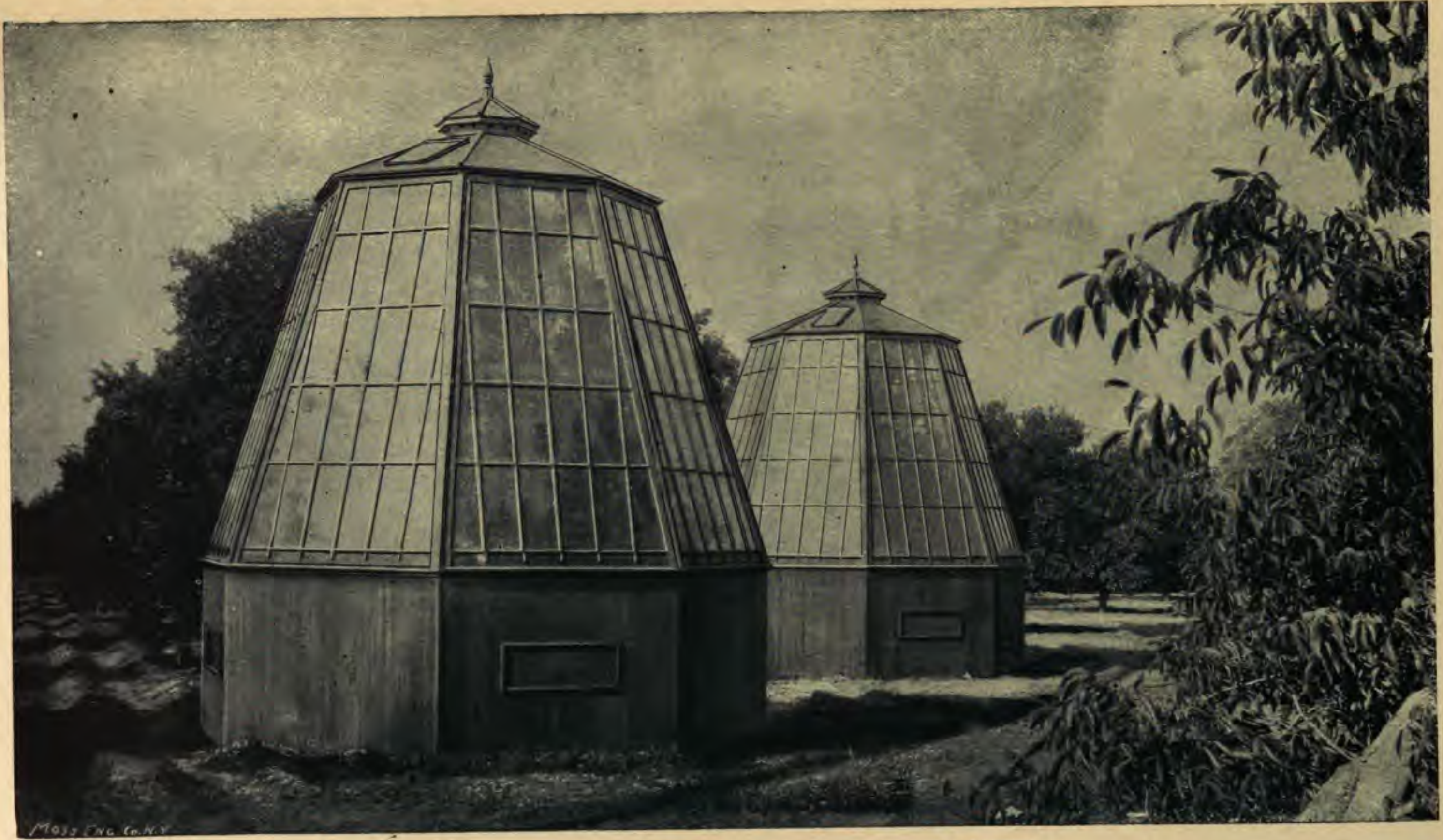
I look for apples and pears to be freer from codling moth caterpillars this year, as orchardists during the spraying season were more careful in purchasing Paris green, and have taken notice of the warnings issued regarding adulterated substances that have been sold as pure Paris green. Some samples submitted I found to be worthless as an insecticide, and others contained so much free arsenious acid that it would have seriously injured the foliage of trees on which it was sprayed.

AUGUST 1, 1900.

To the Honorable the State Board of Horticulture:

GENTLEMEN: During the months of July, August, and September, owing to the Federal quarantine restrictions against all plants with soil attached to their roots, and also fruits and food products from Oriental ports and from Sydney, Australia, and other countries where bubonic plague and other infectious diseases were known or supposed to exist, less plants and fruit arrived in this port. A close watch was neverthe-

PLATE IV.



Glass Houses Covering Trees for Propagating Beneficial Insects.

less maintained upon all vessels from foreign countries, and with the valuable aid of the customs authorities nothing has been landed until inspected. All plants with even the slightest trace upon them of insects new to the State have been destroyed.

For the past five months eighty-three steamers and sailing vessels arrived with the following: 172 cases, boxes, bundles, etc., of trees and plants, and 6,732 packages of fruit. Your request to the Postmaster-General that all plants or fruit arriving by mail from our new possessions in the Pacific should be submitted to the State Board of Horticulture for inspection, has met with his approval, and he has issued a circular notice to postmasters at all ports of entry on the Pacific Coast calling their attention to this important requirement. This will reduce the danger of introducing insect pests and plant diseases from those countries to a minimum.

Your regulations prohibiting the importation of certain animals detrimental to horticultural and agricultural interests have been taken up by the General Government and a bill passed at the last session of Congress that excludes such animals at all ports of entry in the United States. This will give greater protection to California, as formerly such animals, if destined for another State, could not be interfered with unless they endangered the State in passing through. Mr. L. M. Loomis, of the California Academy of Sciences, and I were appointed as special inspectors for the port of San Francisco. There is no salary attached to the position, but it confers upon me increased powers in carrying out your instructions. Deputy Surveyor of the Port St. John kindly sent me a copy of a Treasury Department circular issued to the Collector of Customs, stating that "the Department was in receipt of information to the effect that shipments of the mongoose under the name of squirrel or 'ardilla' in vessels from Hawaii to this port are likely to occur." As the ports of Hawaii are now domestic, the issuance of such an order is of special importance to us, for the reason that the mongoose is a serious pest there and would be liable to be brought in on coasting vessels.

All oranges from the "orange maggot" infected districts of Mexico found in the possession of passengers and crews of vessels are promptly destroyed.

The production of over 20,000 carloads of oranges in this State alone, besides the output of oranges in Florida, Louisiana, and Arizona, should be of sufficient importance to justify the Government in passing a law absolutely prohibiting the importation of oranges and "sweet limes" from the infected districts.

In my last report I referred to the introduction of an internal parasite of the "black scale" (*Lecanium oleæ*) from Cape Colony, South Africa. Since then I have had the pleasure of a visit from Professor Charles P. Lounsbury, the Government Entomologist of Cape Colony, who came to California to collect beneficial insects. He related to me in detail the extensive preparations that his government has gone to in order to propagate the internal parasites of "black scale" for transportation to California. It is difficult to collect "black scale" in any quantity in Cape Colony, owing to the work of its parasites, and in order to secure them it was necessary to erect structures to keep the parasites out until a good supply of the scale could be had. This is a very generous disposition on the part of one government to assist another, and would indicate that they appreciate what California did in 1891 in furnishing them with a check for their destructive "Australian bug" (*Icerya purchasi*). During his visit, we furnished Professor Lounsbury with strong colonies of seven species of beneficial insects, which were forwarded to South Africa. The Secretary of Agriculture of Cape Colony has conveyed the thanks of his government to this Board for the kindness and assistance extended to Professor Lounsbury when here. As the scales develop and are parasitized, Professor Lounsbury will forward them to California.

When Mr. Compere visited Tasmania in search of beneficial insects, he called upon Professor Arthur M. Lea, the Government Entomologist. Mr. Lea expressed the opinion that ladybirds could be sent by mail to California and that large numbers would be alive upon arrival, and that he would send us some of these useful insects. The first consignment was made by Mr. Lea on September 1, 1900, and arrived October 7th, but unfortunately every insect in the package had succumbed to the long trip, as they were in an even, warm temperature, and naturally would be in an active state and require food. In acknowledging receipt of the package, I suggested to Mr. Lea that he try the method which was so successfully adopted by Mr. Compere, of securing a few dates in the boxes. The insects in this way appear to obtain sufficient moisture and nourishment to carry them through, and a very small percentage die on the voyage. I hope he will be more successful with the next sending.

We have successfully sent ladybirds by mail to foreign countries, but those sent by Mr. Lea had to cross the equator. The shipments sent by Mr. Koebele and Mr. Compere from the southern hemisphere always came in a refrigerator or a cool room and passed most of the trip in a hibernating condition and required little or no food. Owing to the winter season in Australia, July, very little collecting could be done by Mr. Compere, so he left Sydney August 6th for Java, via Colombo and Singapore, where he collected. As there is no direct steamer connection from those points with San Francisco, he was obliged to take the insects with him to his objective point, Hongkong. Unfortunately, one of the most severe typhoons that had been experienced in those seas for years was encountered. The packages in the cool room became unfastened and got filled with water; consequently, all the insects perished.

It was your intention that a thorough search should be made in China for parasites of the "purple scale," but, owing to the trouble there, Mr. Compere could not go beyond Hongkong. In his investigation of the trees and plants in the neighborhood of that city, he found the true "red scale" (*Aspidiotus aurantii*) upon the few scattering orange trees. Most of the few scales found bore evidence of the work of internal parasites. He located a small orange tree and purchased it from the Chinese owner. After clearing the grass and weeds away from the stem he found the lower portion of the trunk of the tree badly infested with "red scale," as it was protected from the parasites. I consider the orders sent to Mr. Compere to return to Australia a wise step, as he will be able to collect the internal parasites that he discovered preying upon the "black scale." On his former visit, most of them had hatched. Those that hatched after arrival here were liberated in Alameda County. Specimens were sent to Dr. L. O. Howard, and he replied that it was a new genus. Later he wrote me that he had submitted it to Mr. W. H. Ashmead, who described and named it *Myiocnema comperei.*

Heretofore, most of our noted Eastern entomologists have placed very little value upon California's policy of fostering and introducing beneficial insects for the suppression of destructive species. A change has now come over some of them. The following extracts are from a paper by Professor W. G. Johnson, of Maryland, read before the twelfth annual meeting of the Association of Economic Entomologists held in the city of New York on June 22 and 23, 1900. The full report will be found on pages 73 to 75 of the proceedings of that meeting published by the Department of Agriculture, Washington, D. C.:

The "San José scale" (*Aspidiotus perniciosus*) is a very destructive pest in a number of the Eastern States, and thousands of trees have been dug up and burned. The States of New Jersey and Maryland have been heavy sufferers. Mr. Johnson says:

> Since we assumed charge of the State work in Maryland we have collected the "San José scale" on various food plants, and inclosed infested twigs about four inches in length in glass cylinder tubes open at both ends; the ends were closed with cotton, and if any parasites existed upon the scale they were easily detected and mounted for study, Only upon rare occasions have we taken more than a half dozen specimens from a single tube. This experience has been repeated year after year until the fall of 1899. * * * Last fall, however, I discovered a new locality for *Aphelimus fuscipennis* near Easton, Talbot County, in an infested orchard along the Miles River. The orchard contained a miscellaneous variety of fruits, and all the trees were quite seriously infested with the "San José scale." Instructions have been given the owner to cut them down as soon as possible and burn them. A quantity of small branches incrusted with scale was brought to the laboratory and inclosed in breeding tubes. Much to my surprise, these tubes were swarming with parasites a few days later. From one tube 1,114 specimens of *Aphelimus fuscipennis* were taken, while a second tube gave 432, a third 1,478, and a fourth more than 1,000, but owing to an accident the count in the case last mentioned was not exact.

The writer was greatly elated over this discovery, and immediately sent out the following statement to the State press: "Mr. Johnson advised the people of his State not to burn twigs and branches cut from trees infested with San José scale, but to pile them up in the orchard to allow the little parasites to hatch."

The only serious mistake that I see Mr. Johnson has made is to recommend the spraying of such scale-parasitized trees with whale-oil soap, two pounds to a gallon of water, before the buds open. I doubt if any parasite will remain within smelling distance of such doctored trees. Mr. Johnson has distributed the parasites in other counties of his State and has succeeded in establishing them in at least one other county.

One of Mr. Johnson's concluding paragraphs reads:

> In this case the study of parasitism has given us a valuable suggestion for the treatment of scale-infested orchards, namely, never burn a twig or a tree cut late in the fall, winter, or early spring. A positive remedy one day may be wrong the next day, just as we are able to unravel nature's secrets and interpret them for our own good.

In years past the value of this same internal parasite has been repeatedly referred to by this Board, and it has been distributed, together with two species of predaceous insects, the "twice-stabbed" and "brown-necked" ladybirds, so that the "San José scale" in California has ceased to be a pest, and in very few districts is any spraying done for it. At horticultural conventions eight or ten years ago it was one of our serious problems.

The "yellow scale" (*Aspidiotus citrinus*) was formerly a serious orange pest, but creates no fear now, not even in Riverside or San Bernardino counties, where a scale bug has heretofore been viewed with alarm. The "brown apricot scale" (*Lecanium armeniacum*) is not now feared in Santa Clara or Alameda counties, where it did so much harm to prune trees. At least a dozen other scales and other insects that were formerly serious pests in this State are now rare or do no damage owing to being preyed upon by beneficial insects. With a true parasite for the "red," the "black," and the "purple" scales and "vine leaf hoppers," our orchardists will have a heavy expense lifted from their industry. We know positively of the existence of one internal parasite for the former; four internal parasites for the "black," one in South Africa, two in Australia, and one in Honolulu (in each case the "black scale" is held in check by these parasites); and one internal parasite in China for the "purple scale." With this knowledge, we must persevere in our efforts to secure living colonies for California. Climatic conditions do not affect internal parasites as they do beneficial insects of the ladybird order. Our climate in the interior valleys and away from the coast is evidently too dry for most of our ladybirds, and this is undoubtedly the reason that *Chilocorus circumdatus* for the "purple scale" bred so rapidly on the Hawaiian Islands and appears to be a failure with us.

In a former report I called attention to a new worm (*Laverna herellera*) in apples from Japan. Mr. Compere writes me from Hongkong under date of October 21, 1900, regarding the existence of a pest in pears in China that is probably the same insect. He says that pears in the market are infested with a fruit worm, that over fifty per cent of such fruit is attacked, and that it is not uncommon to find two or more holes in a single fruit. The infested fruit turns black and soon decays. Fortunately, we receive no apples nor pears from those countries as freight, so the greatest danger is in its introduction into California from Victoria, British Columbia, where it has unfortunately been introduced.

In former reports, I have frequently referred to the destruction of trees and plants received from Japan infested with that injurious little "white scale" (*Diaspis amygdali*). We always condemn all trees or plants that have any trace of this scale on any shipment. In the case of trees for the Eastern States, I notify Dr. L. O. Howard of the Department of Agriculture, who in turn notifies the official in the State to which the trees are consigned, as we have no right to interfere with stock for other States.

Professor Fernald, of the Agricultural College, Amherst, Mass., reports that this scale has now been found in five places in his State, and in each case the trees have been traced to a nursery near Boston that imports direct from Japan.

Mr. W. M. Scott of Atlanta, Georgia, reports the existence of this scale "in an orchard of 25,000 peach trees at Irby, Georgia; 10,000 of the trees were fairly incrusted with the scale and in a dying condition, beyond the hope of recovery. They were dug up. The scale has spread to an adjoining orchard of 12,000 trees, where they were doing immense damage."

By the above it will be seen that the drastic measures we pursue in dealing with this and other insects new to the State are fully justified. Another case of prune trees arrived November 27th from Japan infested with this scale, and was destroyed.

NOVEMBER 30, 1900.

TRANSACTIONS

OF THE

TWENTY-FIFTH STATE FRUIT-GROWERS' CONVENTION,

HELD AT

SAN FRANCISCO, DECEMBER 4-7, 1900.

TRANSACTIONS

OF THE

TWENTY-FIFTH STATE FRUIT-GROWERS' CONVENTION,

Held under the auspices of the State Board of Horticulture at Pioneer Hall, San Francisco, December 4 to 7, 1900.

The Convention was called to order by Hon. Ellwood Cooper, President of the State Board of Horticulture, at 10 o'clock A. M., Tuesday, December 4, 1900.

Prof. E. J. Wickson, of the University of California, was unanimously elected Vice-President of the Convention, and assumed the chair while the President delivered his opening address.

ANNUAL ADDRESS OF PRESIDENT ELLWOOD COOPER.

Ladies and Gentlemen: This is the twenty-fifth State Fruit-Growers' Convention, and the twenty-first held under the auspices of the State Board of Horticulture. At the last convention, held at San José one year ago, it was decided that this one should be held in Marysville. There were many important reasons that developed after the adjournment, which decided the State Board to change the place of meeting.

COÖPERATION, the great question that concerns most the fruit-growers, has been so fully discussed, and is so well understood by them, that we need not dwell further on this subject, as a mere theory or as an abstract proposition. We are here to act and to extend the boundaries of the coöperative associations, to remedy the defects, if there are any, or, in other words, to discuss the necessary changes that may be required to make more perfect their operations. The meeting held at San José was devoted especially to this end, and was of the most interesting character. We had a very valuable article by M. Theodore Kearney on the management and success of the Raisin-Growers' Association of Fresno, with its effect on that community; also, one of equal importance by A. H. Naftzger, of the Southern California Fruit Exchange. These presentations led to the calling of a subsequent convention, held also at San José, when a

Cured Fruit Association was formed, known as the "California Cured Fruit Association." We hope at this meeting to have full reports of the workings of these associations. I have on more than one occasion urged that we take up the important question of establishing depots in several centers where our fruits can be had, and employing ten or more competent agents to exploit new markets. Mr. Naftzger has stated that the Southern California agency distributes its products at a cost of about three per cent. I would recommend that one per cent on the gross sales be set aside to establish Eastern depots with agents. This amount would be ample, if all joined in the project. The cost would be returned to the grower in many ways. The prices would rule higher, would be more steady, and the chances of loss greatly lessened. I have, however, discussed this question fully on several occasions. I leave further consideration to the convention.

INSECT PESTS.—My remarks were quite full on this subject at the last convention, in fact, at nearly every previous one. Still, there is something new developing from year to year that is worthy of attention and that encourages the hope that sooner or later the fruit-growers will be relieved from the expense of combating these enemies. The correspondence of George Compere, and the accounts given of his discoveries of predaceous insects in places where he visited, have been of great interest. The colonies of beneficial insects sent to us and distributed in various places will no doubt result in profit to the State. His last letters were written in Batavia, Java, dated September 11th; Singapore, September 21st; Hongkong, October 6th and 13th. He was then about leaving for Australia. A report of what has been discovered and sent here will be read before the convention. It is important that this work should be continued. I therefore recommend that this convention pass a resolution asking the incoming Legislature to appropriate ten thousand dollars ($10,000) for the two years succeeding June 30, 1901.

IRRIGATION.—The past year has not been a profitable one for the fruit-growers, owing to a deficiency of rainfall, at least for the southern half of the State. Much expense has necessarily been incurred in developing water to supply the deficiency. The crops have been light and many have sustained losses. The water-supply has become a daily study and is a subject for us to consider. Much has been written and many suggestions have been offered. My address of two years ago at the Fresno meeting was quite full on this point, and I will not take your time in repeating it. The Department of Agriculture, in the Year Book of 1899, has taken up the subject of irrigation, and has treated it, in all its phases, from page 591 to 612, inclusive. I recommend all interested fruit-growers to read the same. I also refer to my first address to the fruit-growers, to be found in the biennial report of 1885–86, pages 32 and following.

Forest Protection.—This subject is attracting more and more the attention of the Department of Agriculture. In my address of one year ago, I mentioned what had been done in Santa Barbara County, and I have to report that the reservation is districted, and that roads are being made, so that rangers can with facility reach any part quickly in case of fire. Notices have been generally posted and our people made acquainted with the laws relative to starting fires, and the consequences. The Government Forester, Mr. Crawshaw, has shown great activity. I am pleased to report that reservations are being looked after, showing that the Government is being educated to the importance of our forests. A resolution was passed at the San José meeting (see State Board Report, page 138) that all mountain lands not occupied in California be withdrawn from settlement, and that devastation by prospectors be restricted.

Food Adulteration.—This subject was referred to the Legislative Committee (see State Board Report, page as above given), to devise a plan by which the fruit-growers could get relief from the disastrous competition of adulterated products. We have from time to time new and dangerous admixtures foisted upon the public, always upon the plea of "not harmful." The time has arrived when something should be done to put into effect our pure food laws. We have a most excellent dairy law, olive oil law, drug law, and pure food law generally, but no appropriation was made to execute them. I therefore recommend that this subject be taken up by the convention and a resolution passed, calling upon the Legislature to authorize some one of the bureaus now organized (or to create a new one), to prosecute violations of said laws, and that a sufficient appropriation be made to begin the work. I have pointed out on previous occasions that the fines it would be necessary to impose would more than cover all the outlay, but it requires money to begin the work and some one authorized to prosecute offenders. Any appropriation would simply be a loan by the State, which would be more than reimbursed by fines collected. On my way to this city I saw the reports in the morning papers of two days ago, from Manchester, England, that more than seventy people had died from drinking poisoned beer, and that eighteen thousand were sick from the same cause. Formerly, many ships were loaded every year with barley at this port for New York and the English Channel, to be used for brewing purposes. Malted barley and hops are expensive, hence the resort to chemicals and poisons as a substitute. I received recently a bulletin published by the University of Arizona Agricultural Experiment Station, that the use of "preservaline" or "freezeine" in milk was causing death to the consumers. These preparations are foisted on the public as "not harmful," and are used to prevent the milk from souring. The adulteration of food products is the greatest curse that ever was conceived by the human brain.

ORCHARD WORK.—Tree-planting, cultivation, pruning, thinning of fruit, gathering, packing, and preparing for market have been so fully discussed the past fifteen years that they have been reduced to a science: every phase connected therewith is laid down in the State Board Reports.

THE BELGIAN HARE.—I beg to call your attention to the danger that may arise if these animals escape and run wild. It is claimed that they increase rapidly, hence they might become a great pest. You will not forget that an Englishman, living in Australia, had sent out to him from England several kinds of rabbits; among them was the wild English rabbit. It is now the greatest pest in Australia, and has cost the Government over twenty millions of dollars, and the problem of its suppression is not yet solved. I have been told that some of the Belgian hares have already escaped in Santa Barbara, and no doubt they have escaped in many other places. Some means should be devised to prevent these animals from becoming a pest. I recommend that we pass a resolution calling upon the Legislature to pass an Act that will prevent the spread of these animals as a pest.

SCOPE OF THE WORK of the fruit-growers is constantly increasing. New conditions arise, and subjects that would formerly have been digressions from the legitimate calling of the fruit-grower now appear and claim our attention.

For more than sixteen years I have been honored with the Presidency of the State Board of Horticulture and have presided at all the Fruit-Growers' Conventions during that period, excepting one, which I was not able to attend. Several years two conventions were held—one in the fall and one in the spring. I have prepared addresses, presenting the important points of interest and the difficulties we had to contend with, and recommending what I considered essential to best advance our prosperity in the fruit business. Whatever has been wanting in the presentation of the various subjects or interests has been from incapacity and not from lack of earnest desire on my part to do my full duty. I have in all cases avoided repetition and been as brief as the subjects would permit in my efforts to give a clear and definite idea of what was important to be conveyed. I have exhausted all my resources on the fruit subject, and in the future can only point out new conditions as they appear. All my addresses are on record in the State Board of Horticulture Reports. I ask your indulgence in departing from the usual course to introduce a new subject, but indirectly of great importance to the cultivators of the soil.

NEW YORK OBELISK.—The late J. De Barth Shorb, in an address delivered before the Agricultural Association of California, some twenty years ago, said: "The history of agriculture is coincident with that of civilization itself, and so intimately blended that the study of the one means necessarily the study of the other. Civilization depended upon agriculture and climate. This carries the mind back to Egypt, the birthplace of European civilization—five thousand years ago. What Egypt has been to European nations, California should be and must become to the American nation. Agriculture in Egypt is certain, and there man first became civilized. Agriculture in California can be made as certain, and here man should develop a civilization and prosperity unequaled in the world's history. The arable land of Egypt is only 2,200 square miles, and yet from this insignificant area were supported at one period over 7,000,000 of people."

It has been stated as a fact since the late Chinese troubles, that a portion of Northwest China, not larger than California, supports 177,000,000 of people. Allow that one half of our area could not be cultivated. The other half at this ratio would include more than the entire population of the United States. California is destined to become the greatest State the world ever saw—and San Francisco a great city. The new conditions, our new possessions, the impetus given by the destiny of affairs, will bring to this city a trade with all the Pacific Islands and with the Orient not dreamed of by the most sanguine. What New York is to the Atlantic seaboard, San Francisco must be to the Pacific. We are practically beginning a new life—a new world is to be developed. We should be ready and equal to the task. The fruit-growers and agriculturists of the State have no peers in their line, and should shape the laws that will govern the new conditions. We must cultivate spirit and sentiment, and not devote our entire time to the accumulation of money. Arithmetic, according to the followers of Plato, was not to be studied with gross and vulgar minds, not for the purpose of dealing with merchants and tavern-keepers, but for the improvement of the mind, considering it as the path which leads to knowledge of truth and reality. The inscription on our money is "In God we trust." Let not this money be our God.

Now, what I wish to introduce at this point is the removal of Cleopatra's Needle, known as the "New York Obelisk," from New York, and the setting of it in Golden Gate Park, San Francisco. I have heard, through what was represented to me as reliable authority, from two different sources, that the severe winters in New York were causing the obelisk to scale off; that already some of the hieroglyphics had scaled off. If this be true, and it can be easily ascertained, an effort should at once be made to remove it. California has a climate somewhat similar to that of Egypt. It would be a great misfortune, yes, even criminal on our part, to allow this monument to be defaced. It would be a loss that could not be replaced. It connects us with extreme antiquity. No possible effort should be withheld in order to preserve it. The obelisk is composed of Seginite rock, is 71 feet high, the height being nine times the breadth of the base. It was erected at Heliopolis, where it stood 1,500 years; was then removed to Alexandria, where it stood 1,900 years. It therefore represents a period 3,400 years ago. It was presented by the Khedive of Egypt to the American Government in 1881. It cost to remove it from Alexandria and set it up in Central Park, New York, over $102,000. The late Wm. H. Vanderbilt agreed before the undertaking to donate $75,000. The great task of removal was undertaken by Lieutenant Gorringe of the United States Navy. The success of transporting and erecting was due to his genius ; his enthusiasm had no bounds. If this great monument is allowed to scale off and crumble to pieces, the object or purpose of the removal to New York will be defeated. To remove it to California would not in any way detract from the munificence of the late Wm. H. Vanderbilt. What he has done is of record, and will last as long as the obelisk will stand. We want it here ; first, because it can stand in the open, without injury so far as the climate is concerned ; second, as California will become the fruit garden of the world, we want it as the educator of the youth for all time to come. Nothing could be more inspiring than the impression that it would give, knowing that it represented the earliest civilization, their industry and mechanical skill; that it emanated from agricultural pursuits. I have still fresh in my mind the reflections as I sat at the base of this great work. I tried to carry the mind back and receive impressions from the civilization of that people. The view creates a desire to study. Let the future profit by the lessons of the past. I recommend that we pass a resolution asking the California State Board of Trade, in conjunction with the Park Commissioners, to take up this matter ; that they ascertain if this monument is scaling off, and if so, to negotiate without delay for its removal to Golden Gate Park, San Francisco.

All these matters are submitted for your consideration.

VICE-PRESIDENT WICKSON. The address is very rich in suggestions, and also makes specific recommendations. What is your pleasure in regard to it?

Mr. Adams moved that a committee of five be appointed to consider and report on the President's address.

This motion was carried, and Ed. M. Ehrhorn, Alex. Gordon, John Swett, R. D. Stephens, and Return Roberts were appointed such committee.

ECONOMICS OF PRODUCTION, AND THEIR INFLUENCE UPON FRUIT-GROWING OF THE WORLD.

ADDRESS BY HON. WM. H. MILLS, OF SAN FRANCISCO.

I deem it an honor to address the people who are creating the commonwealth of California. The census returns which have just been made prove conclusively that the permanent growth of this commonwealth is dependent on fruit-growing. The group of counties south of the Tehachapi shows an increase of fifty-two per cent on the population of 1890. The next largest group relates to the Bay counties of the State, where the increase was 126,000, of which 46,000 relates to the commercial population of San Francisco. Outside of that 46,000, the greatest growth was in the Santa Clara Valley, where fruit-growing has settled a population of nearly 50,000, the most prosperous, perhaps, in many respects in the State of California. The most remarkable influence of fruit culture, however, in the way of development, and the one from which the greatest or most profitable result may be drawn, relates to Fresno, where raisin-growing has produced an increase of population equal to nearly eighty per cent of the entire increase of the San Joaquin. We have had, then, three notable groups of increase. Subtracting the 46,000 increase in San Francisco, and about 20,000 in Alameda County, the increase in the Bay group is referable, very largely, to fruit-growers. The increase in the San Joaquin Valley was 26,000, and of this nearly eighty per cent is referable to the raisin industry. That instance has a further lesson. There are just about 100,000 acres of land under cultivation at Fresno. It is supporting a population directly of over 20,000, which means that under irrigation and under intensive culture the rich lands of the San Joaquin Valley, with the favoring conditions of climate, would support one person to every four acres. Now the entire San Joaquin Valley is not capable of this cultivation; but a very large percentage of it is, and if you will carry out this proportion throughout that valley, you will have anywhere from ten to fifteen millions of people.

The question arises, is it best to do this? Take for instance, the kingdom of Belgium. Belgium has a territory somewhat less than the area of San Diego County, in this State. It has a population of 6,700,000 people. Being a recent visitor to that country, I am prepared to speak from observation, to some extent at least, as to how that population is supported, and why? They are largely engaged in manufacturing. At the same time, fruit culture, the most intensive I have seen in the world, is contributing very largely to the support of commerce, art schools, and manufactures, and consequently to the population of that country. Now, this is a digression incited by the very able and thoughtful address of your President, who, in common with all who have ever seen California or who have considered it from the standpoint of its representations abroad such as we have just made at Paris, predicts that California is to be a great country, that there is to come to its people the highest degree of material well-being of any people in the world, and this prophecy has been so constant that we indulged it in such a hopeful spirit that I was pleased, in listening to your President's report, to note how much ground you have traversed in the discussion of questions relating to that development, which, if the fulfillment is ever to come, is to fulfill the prophecy of such patriots as my friend who presides over the destinies of your organization.

I have a matter of practical importance to present to you here this morning. You will have observed in the President's message a reference to the Pan-American Exposition. That is a purely American institution. It promises to be very successful indeed. If we are ever to become a great country we will become such by reason of having a market for the productions of our soil and climate. Given a market for ten times as much fruit as you are raising in California, in the next six or seven years ten times the fruit will be forthcoming. It is at that end of the line that success arises. You cannot push products upon a market; the market must take them willingly. Of course, you can be in the market and present your commodities in a favorable light. If there is a demand anywhere for them in the world, you can take them to the place of demand, but that is exactly the difference between pushing and pulling with a rope. You cannot push, but you can pull. If there is a market somewhere, production arises promptly in response to that market. Now we are going to have a great American exposition, and the only way any merchant can sell his wares is by being in the market. California should be in that exposition; she will be there in the best way she can be placed.

The Los Angeles Chamber of Commerce, the State Board of Trade, and the Southern Pacific Company have been jointly assigned one fourth of all the space in the horticultural hall. This one State has been given one fourth of all the space to be devoted to horticulture in that great exposition. And now comes the suggestion which arises to my mind, and which I want to present for practical solution to the fruit-growers of California. There will be at least an average attendance of 100,000 people a day, and it will rise sometimes to 300,000. It is no exaggeration to say that within one day's travel between sun and sun of the City of Buffalo there are over 40,000,000 people residing, and within twenty-four hours' travel there are over 50,000,000; and from the summit of the Rockies to the Atlantic seaboard a population of 73,000,000 of people reside. And they will in a very large measure attend this exposition. Besides that, the world will be there.

The recent and intimate experience, lasting over a period of eight months, with expositions and their meaning and their use, has convinced me that people who are looking for something in which they may deal profitably, attend these expositions. It is not the number so much as the quality and determination and purpose of those who do attend them. Now, within the grounds of that exposition fresh fruit will be sold, and the very best way to advertise California's fruit, its fruit-growing capacity, the superiority of the qualtity of its product, the capacity of its soil and climate, and manifest destiny that it is to be the orchard of the world, is to buy the concession of the right to sell fruit during the entire exposition at Buffalo, and have every fruit stand there a resplendent advertisement of California's fruit capacity. In order that this might be a practicable thing, I took the matter up with the officers of the exposition, and I have in my pocket a final message which was answered by the request to hold the concession until something could be done about it from California. They have agreed that they will sell to an individual, or to a firm, the entire concession to sell fresh fruits during the Buffalo Exposition. They do not look upon it as a matter of exhibition. It is to be the sale of the fruit. They, however, say they do not want it understood that California is to have the exclusive right to sell nothing but California fruit, because they say the other States in the Union may have some ambition to have their fruit sold. In fact, it never occurred to them that the sale of fresh fruit inside of the exposition grounds might be made an advertisement. But since this correspondence opened it occurred to them that a fruit stand was the very best advertisement one can have for a fruit-growing country. So they began to be afraid other people would want to sell their fruit, as a means of showing their capacity; so they said we will sell the concession, but you must not have it understood that no fruit from any other part of the country can be sold.

Now, we cannot ask anything better than to have fruit stands there from Ohio, from New Jersey, and from other States. I saw New Jersey fruit in Paris being sold as California fruit. And when I opened it and tasted it I was thoroughly persuaded that it was of the kind of fruit mentioned in the Scripture, relating to the tree planted in the Garden of Eden. And the Lord said, "The day that thou eatest thereof thou shalt surely die." I am not at all apprehensive that if we should sell a sub-concession to any State in the Union to show its fruits, we will suffer by comparison. I will leave to you this suggestion of obtaining the concession to sell fruit. I add this, however, we could take the several fruits in their season and sell at retail. What they expect is a percentage of the money. If a responsible firm will take it and the growers will give their best fruits for shipment they can be taken ripe, because carried on passenger time.

Now, you can commence in the spring with the earliest fruits, and as these fruits would come from California we would be illustrating continuously the early character of the fruit, the earliness of our climate, and from strawberries in the spring down to the fall of the year. For that exposition will be held until into November; and during the entire fruit season, California would be represented on these fruit stands. Not only would it educate the people, and be a very profitable undertaking, but it would be the very best advertisement for the capacities of this State.

I want to present to you this morning, very briefly, a few suggestions concerning the economy of production and its influence upon the products of our country: When we arrived in Paris, before our exhibition was installed, I visited the exhibition of the French Colony of Algiers. I was struck by the similarity of products from Algiers and California. I was struck with the beauty of their arrangement and the amplitude of their pavilion, and it appeared to me that the nations of the earth were more proud of their colonial possessions than of anything else, and France had given the very best place to exhibiting the resources of the colonies.

I say incidentally now, because the matter is in my mind, that the most mournfully pathetic thing I saw was the beautiful building of the Transvaal Republic, which arose to its completion and had no flag over it from the first of May until the close of the exhibition. The door stood wide open all the time without any exhibit in it, waiting to see whether the liberty of its people should live or die.

Now in this great colonial section, Algiers stood preëminently the first country with its fruits and representations of its flowers. They were very beautiful. I was astonished to find the association of cereals with citrus-growing, for in illustrating an exhibition of that kind in Columbus the President observed: " It is so unusual that citrus and cereal growing should be found side by side, seems improbable that it should be successful in California." As the Algerian exhibit went into place I began to be apprehensive. I think none of you gentlemen will ever know how you will analyze the country from which you come, the State you love, the State that has the devotion of your whole life, until you come to show it to the world, to set it up and say, "This is what our State can do." I think none of you can ever understand the apprehension one feels until the time of triumph is reached. As that exhibition went into place I began to fear Algiers would show a greater diversity than California.

At last ours was finished, and we stood before it thoroughly satisfied that there was no country on earth that could equal it; and we demonstrated it there so completely that the people of France declared that the fruit we showed from California was equal to the best fruit ever grown by the forcing process, and the diversity greater than any other country can show. Now the question immediately arises, what of it if you can produce these fruits? We had a jar of peaches furnished by I. H. Thomas, of Visalia. Standing by those peaches I heard a gentleman say: "The people of California know how to make wax fruit as well as the people of France." Then it occurred to me for the first time that a percentage of the fruit was made of wax and was imitation. I found in the fruit exhibit of Persia and Servia that all of the fruit exhibited there was wax, and it was extremely beautiful. It may have been a perfect reproduction of originals. If so, it was fair, but it had never occurred to us that we could do that.

Standing before that jar of peaches, the finest in the exhibition, a gentleman said to me, "These peaches were grown under glass." And that brought on a conversation. I discovered that gentleman to be the president of the Fruit-Forcing Association of France. He is the largest individual fruit-grower of France; and it was utterly inconceivable to him that peaches, pears, apricots, plums, and prunes could be produced in what is called by them "the full air process," or what we would term "open air process." This led to an investigation of what was the forcing process, and inquiry developed certain facts and certain conditions with reference to the cost of production in Europe. That I deem of the highest importance, and it was that which induced me to accept your kind invitation to address you. After discussing it with him I became satisfied that the natural conditions of California resembled more nearly the artificial condition which is resorted to by growing fruit under glass, than any other country. In all Paris there are 300 miles of walls having glass over them, under which peaches, apricots, grapes, and pears are grown. And those who are pursuing that process are filling all the natural conditions, or "open air" conditions, of a country which produces the fruit naturally. They declare we control the fertility because we can put it there, the moisture because we resort to irrigation, and the heat because we can make it artificially, and we leave nothing to chance. How can we fail? We can produce exactly what we want to produce.

For illustration, they take a peach and go to the market in the morning in March, April, or May, and sell that single peach for $2.00, sometimes $2.80. And it is taken readily, because of its great beauty and luxury. They are used for table ornamentation instead of flowers, and in the winter time the city of New York is the best market. They take a peach and put a stencil on the side, or, maybe, an eagle, or the name of the grower; or, if a large-minded person desires to give a great dinner he can have the sun paint the name of each guest on the side of a peach. They put the stencil on and it leaves a green line. If a picture of an eagle or the name of a guest, as the case may be, they put tissue paper on, which subdues the coloring under the paper, and leaves it red where the sun is permitted to strike the fruit.

One economy is the difference in the efficiency of our labor. We had panoramas of the fruit-growing sections of California from San José and Vacaville, which presented in one scene twenty square miles of fruit orchard as compact as you know them to be up there. The first question asked me was, "How many people reside in that valley?" Well, naturally, I told what was the truth, about 1,500. I don't know, exactly, just how many people do reside there. And there was a constant expression of amazement as to how 1,500 inhabitants, many of whom were women and children, could cultivate that much orchard. We had a panorama of a prune orchard in bloom, and there was not a house to be seen; and in looking at that the question was asked, "Where do the people live who cultivate such great orchards as these?"

Notwithstanding the difference in the cost of labor, the ultimate product of labor in California is cheaper than it is in France, or even in Austria, which is the cheapest country in the world.

The next economy is the difference in fertility, the productiveness of the country. The plant food in the soil which the plant could get has disappeared from the soil long ago and chemicals have to be resorted to. This costs variously, with trees more, and vines less. You will observe the natural fertility of your soil is exceedingly productive.

In regard to taxation, if you have ever complained of taxes, remember if you had to pay taxes as they do in France, the prune-growers in the Santa Clara Valley would have had to pay to the Government, in 1899, $360,000. France has a standing army of 535,000 of the very flower of the manhood of France, while there is a sleeping potentiality of 2,500,000 other men who are liable to be called at a moment's notice, the equipment lying in arsenals of France, and in six days two and one half million men could be moving either for defense or invasion, and it is immensely costly. In addition to this, they have a very curious system of taxation. After the taxes are collected, if there is not enough, they immediately assess and collect an additional amount in proportion to what has already been paid, so they never know when they have done paying taxes.

In France they have a uniform failure of crops once in two or three years. We have nothing of that kind in California. I had a photograph showing a tree upon which the apricots had set. I showed a photograph of the same tree after it had been thinned, and a third one when the product had been taken off and was lying on the ground. Those three photographs were the marvel of all fruit-growers of Germany, Switzerland, Belgium, and France. They were constantly sought for and consulted.

The difference in manner of cultivation I will not attempt to discuss, but one thing I will say, we had seventeen days of the hottest weather I ever experienced, and the nights were as hot as the days. This convinced me that the summer conditions of that country were not favorable to the perfect development of fruit. Everything started in to ripen; the heat brought on the prune crop when not more than two thirds grown, and the crop was a failure. The manager of the American line said they formerly had large shipments of prunes to the United States, but that the traffic had disappeared entirely. California is supplying the entire American market, has invaded the German market, and now her growers are in France to take the French market.

I was told that the trees in Paris would lose their leaves in the summer by reason of the dust, and then the trees began to die. I began to doubt the theory that the dust had anything to do with it. The first thing I noticed was that where there was grass on one side of the trees and the pavement on the other side, the leaves only fell off over the sidewalk, and I came to the conclusion that it was the reflection of the sun from the sidewalks that was killing those leaves. When I visited the prune orchards after that hot spell I saw that the leaves had lost their value as the lungs of the plant, and it was because the ground had not been cultivated. It was hard, and reflected the rays of the sun and the heat back on the leaves and partially cooked the fruit and spoiled it.

Now, when you remember that we have no killing winters such as is known in other countries; when you remember the difference in the efficiency of labor, the value of our machinery; when you remember the absence of fertilization, you will find that you can produce fruits in California and lay them down almost anywhere in the world cheaper than they can be produced over there, if the system of distribution will permit it. This is the great question before this organization now. It is a question of getting into the markets under favorable conditions; it is a question of reaching after competition with other people. I visited that great exposition, and the very first thing I was able to perceive after I had been there one month was that in the very nature of things, in the coming destiny of industry, everything would ultimately be produced in the locality best adapted to its production, that wherever the soil and the climate favored the production of any particular thing, that was nature's bounty. The only thing is the question of distribution. There is coming to the industries of California that free distribution which will put us in exactly the relation with the races of the world that has made the great commercial centers. The sea is to be the predominant factor in the development of the Pacific Coast; the interoceanic canal is to place us at equal advantage with every country in the world whose industries are made free by the freedom of the ocean.

It is an inherent situation wherever anything can be produced economically as against its production anywhere else, where the sea may be invoked as the distributer, the exchange takes place.

Now, having satisfied myself fully that California is capable of becoming the orchard of the world, I can see arising here an industry that will be the foundation of this commonwealth, and it will relate to the intensive culture made by us in fruit-growing. See the difference between the results of the cultivation of 100,000 acres in Fresno and the entire Sacramento Valley! Now, I have an affection for the Sacramento Valley. I was almost raised in it. I love it for its beauty and I love its people, and I have the most profound respect for them. But there has been more growth and greater development toward empire on the 100,000 acres of Fresno than in all of the great empire known as the Sacramento Valley. The entire increase of population in the Sacramento Valley was 7,000, and over 5,000 was in the City of Sacramento alone.

You cannot overestimate the advantages of education, or the social advantage, the social attraction, the social value of a people in attracting population and capital; and when you visit the Sacramento Valley and travel for miles and see no cottage over whose threshold vines have entwined, and remember there is no heart anywhere on the earth looking back to that place as the home of love; and when you see smaller areas upon which 20,000 people are living, then you are prepared to say that the monopoly of God's green earth is the greatest curse that can befall any country.

Now, gentlemen, I hope that the matter of acquiring a concession to sell the fruits of California in their season at the Buffalo Exposition will at least receive respectful attention. I believe there is a great future for our State, and I love to believe it. When you are in a foreign land slight associations may revive in the heart and mind the dearest associations the human mind and heart can know, and one instance in my own experience I can now recall with distinct vividness. I was in the City of Berlin in one of its great parks, standing and looking at that great monument called the "Column of Victory," put up in remembrance of their great victory in the Franco-Prussian war. It is a beautiful monument of winged Victory; the figure stands on tiptoe lightly, with wings spread, and it is so lifelike and so artistic, having it between you and the heavens, that it seems to change its attitude every moment. How it ennobles and dignifies the inspiration of victory. I was thinking with what love and pride the Germans were regarding it, the monument to their achievement; the band was playing at a little distance, and all in all, the thought came into my mind and I thanked God that across the seas there was but one America, and in that America but one California.

At the close of his address, a vote of thanks was tendered Mr. Mills, and, on motion of Mr. Wickson, it was placed on file and referred to the Committee on President's Address.

RESOLUTIONS.

MR. R. D. STEPHENS offered the following:

Resolved, That a Committee on Resolutions be appointed by the President, to consist of five members, to whom all resolutions be referred, and who shall report for or against their adoption or amendment.

Adopted.

Resolved, That a Committee on Marketing be appointed by the President, to consist of nine members, and a Standing Committee on Transportation, to consist of five members.

Adopted.

Resolved, That a Committee on Legislation be appointed by the President, to consist of five members, to whom all matters relating to legislation shall be referred.

Adopted.

LETTER FROM MRS. STANFORD.

MR. EDWARD BERWICK read the following letter from Mrs. Leland Stanford:

MR. EDWARD BERWICK:

DEAR SIR: I find upon my table this morning a letter from you, dated December 24th, and I took great pleasure in reading the copy of resolutions passed by the Fruit-Growers of California during their recent visit to the Stanford University, and I thank you for sending them. I thank you for the interest that you evinced by visiting the institution which my dear husband established with the hope and sincere prayer that it might prove an undying benefit to the children of our land.

Yours gratefully,

MRS. LELAND STANFORD.

Twenty-seventh December, ninety-nine.

The convention then adjourned until 2 o'clock P. M.

AFTERNOON SESSION—FIRST DAY.

TUESDAY, December 4, 1900.

At 2 o'clock P. M. the convention reassembled. President COOPER in the chair.

REPORT OF THE CALIFORNIA FRUIT-GROWERS AND SHIPPERS' ASSOCIATION, 1900.

By COL. H. WEINSTOCK, OF SACRAMENTO,
President and General Manager.

Summarizing the results of the season's shipments, the following may be said:

Cherry crop fairly good, but damaged by late rains and damp weather. Prices good until late. Late cherries arrived in poor condition.

Peach crop short, and shipments met the abnormally large crop from Georgia, Michigan, Delaware, Rhode Island, and Maryland. A large amount of our fruit arrived in poor condition.

A large, heavy, and good crop of plums and prunes; was poorly packed and market overstocked several times. Our plums, meeting the Georgia and New York State plums, whose crops were good this year, disastrous prices as a rule prevailed.

The pear crop was large. Much of the river fruit was bought up by shippers and the growers realized a fair profit, but the prevailing prices in Eastern auction points were poor at the beginning and at the height of season, but stiffened toward the end of July, when the fruit began arriving in poor and overripe condition.

Grape crop fair, and good fruit brought good prices. Tokay grapes which had been irrigated were delivered in New York eighteen and twenty days from the vineyard in miserable condition. The grapes not irrigated, and those that went through rapidly, were in good condition and brought good and in many cases fancy prices.

Refrigerator cars were short at the height of the season, and some fruit was shipped in "vents," arriving overripe and depressed the market.

The time made by the trains was unstable, and great dissatisfaction expressed because of same.

On the whole, the results of the season's shipment is disappointing and can be traced to the following causes:

First—Poor packing. Particularly was this true of the large plum crop, which was slaughtered by poor packing.

Second—The length of time the railroads consumed in transportation. It behooves the fruit-growers and shippers to insist that the transportation companies next year make the time made in previous years: Seven days to Chicago and adjacent cities; nine days to New York and adjacent cities; ten days to Boston and Montreal.

Third—The very large crop of Eastern fruit; as many as eighty carloads a day of Eastern peaches being dumped into the New York market alone.

Fourth—The alleged plague, and the fact that it was telegraphed all over the world that the State had been quarantined. All of which materially injured the sale not only of green fruit, but of dried fruit as well.

Fifth—The fact that, owing to the several seasons of drought, the keeping qualities of California fruit were not so good as usual, and owing to the weakened condition of trees, ravages by insect pests were more apparent than in other years.

Commenting upon some of the causes for low prices, let me say relative to the first cause given for low prices, namely, poor packing, that much remains to be desired. There has been a great stride made in the packing of our fresh fruits, and some of the packing which goes East is not to be surpassed anywhere in the world. But there are still too many growers who, either as a result of ignorance, carelessness, or dishonesty, do not put brains or conscience into their fruit boxes. Thus, they not only injure themselves, but they injure as well every other grower shipping fruit.

Despite the abnormal Eastern crops thrown on the market this year, California fruit of good size and good quality, handsomely packed, as a rule, brought satisfactory prices.

The second, and perhaps most serious, cause for low prices was the delay in transit. The time made in previous years was seven days to Chicago and adjacent cities; nine days to New York and adjacent cities; ten days to Boston and Montreal. This year, as a rule, it took fifteen days to Chicago; sixteen days to New York and Philadelphia, and seventeen days to Boston. When it is remembered that the fruit this year was not so good as usual and that its keeping qualities had been lowered by several seasons of drought, it can easily be understood how disastrous must have been the results in nearly doubling the time of transit. To look for satisfactory prices under such conditions would be asking for the impossible. As to the cause for the delay in transit, opinions seem divided. There are those who hold the Southern Pacific Company wholly responsible for such delay and look to them alone for the remedy. There are others who, as mitigating circumstances, point to the facts:

(1) That the Southern Pacific Company lost twelve or fourteen engines in one fire at Bakersfield;

(2) That it was impossible for them to get new engines at any price in time for this season's business;

(3) That there was an abnormal freight traffic to be handled in all lines this year by the Southern Pacific Company and connecting lines, which overtaxed all their facilities;

(4) That much delay was occasioned on the Union Pacific by reason of radical changes which were being made in their roadbeds and in tearing up and laying down of new rails, tracks, etc.

Whatever may have been the causes for these unfortunate delays in transit, the fact remains that unless the railway companies can remedy the matter and transport fresh fruit within the time made in previous years or less, the industry stands practically ruined and the State may as well abandon all hope of ever profitably shipping fresh fruits to the East. Believing as I do that the transportation companies keenly realize and appreciate the value of the fresh fruit traffic, there is every reason to expect that, so far as lies in their power, the causes which led to this year's delays in transit will be removed before the opening of the next shipping season. It has been suggested that one way to lessen the risk of delay beyond Ogden is to divide the business among several roads so as to get the best possible service.

As to the third cause for low prices, namely, "the very large crop of Eastern fruit," it may be said that never before in the history of American fruit culture was so abnormal a crop of fresh fruit sent to market. Nearly every State in the Union had a fruit crop this year, and some of them had the heaviest fruit crop in their history. This, in itself, would have prevented high prices for California fruit, but when coupled with such delays in transit as to bring California fruits East in a condition which prevented their reshipment and forced their consumption at the point of arrival, it could lead only to disaster.

This year's experience has made plain that so far as peaches are concerned, whenever the Eastern States have a full crop, it is unprofitable to send any but the very finest peaches of good keeping qualities. The balance should be retained at home and canned or dried.

The question has been raised as to whether the cost of icing fruit cars cannot be reduced. It is pointed out that this year the car companies had their profits most seriously cut into by the increased time of transit. Formerly they had to keep cars iced from six to ten days. This year they had to keep them iced from fifteen to seventeen days. Since they receive a fixed price for icing, the increased cost was a most heavy tax upon them. A reduced cost for icing can therefore not be looked for until much shorter time in transit is secured.

Table Showing Destination and Number of Cars Shipped to Each Place in 1895, 1896, 1897, 1898, 1899, and 1900.

Destination.	1895.	1896.	1897.	1898.	1899.	1900.
Chicago	1,473	1,007	1,410	1,203	1,060	1,101
New York	862	1,055	1,456	1,429	1,694	1,527
Boston	279	471	543	536	710	649
Philadelphia	82	90	202	176	339	212
Minneapolis	124	147	180	167	247	302
Baltimore	37	5	16	16	67	34
Cincinnati	15	2	20	15	89	35
Kansas City	91	81	86	116	165	129
Montreal	44	81	98	96	128	126
New Orleans	75	85	81	62	126	136
Denver	148	136	98	229	269	233
St. Louis	78	68	59	27	115	79
St. Paul	109	91	121	67	125	131
Omaha	176	85	165	156	194	240
Cleveland	29	10	37	25	83	63
Pittsburg	26	25	40	47	137	144
Buffalo	15	7	15	5	34	10
Milwaukee	42	32	52	19	60	68
England		42	58	42	117	192
Scotland					4	7
Germany					2	
Mexico				1	1	
Minor Points—Canada					52	71
Minor Points—United States	863	532	586	572	1,051	946
Totals	4,568	4,052	5,323	5,007	6,869	6,435

Table Showing the Number of Cars of Each Variety Shipped in 1895, 1896, 1897, 1898, 1899, and 1900.

Varieties.	1895.	1896.	1897.	1898.	1899.	1900.
Pears	1,187	1,624	1,640	1,595	1,684	2,115
Peaches	1,289	976	1,316	1,103	2,625	1,361
Grapes	1,010	712	1,100	734	847	825
Plums and Prunes	465	407	742	542	885	1,158
Apricots	162	172	177	123	90	152
Cherries	180	88	239	297	85	238
Apples	105	53	61	596	490	512
Quinces	13	8	24	1	19	10
Figs		2	3			
Nectarines	5	1	10		2	
Persimmons			2	1	1	3
Mixed	152	9	9	15	24	27
Cars not reported					117	34
Totals	4,568	4,052	5,323	5,007	6,869	6,435

On motion of R. D. Stephens, of Sacramento, the report was received and placed on file.

THE MARKETING OF CALIFORNIA FRESH FRUIT IN THE EAST.

By WM. B. GESTER, of Placer County.

Mr. President, and Ladies and Gentlemen: At the annual convention held at Fresno two years ago this month, having just returned from the East, where I had spent the summer looking after certain deciduous fruit interests, I gave you, at the request of the President, a narrative of some of my experiences and the results of my observations. Since that meeting I have spent about two thirds of the time in the East, not as a looker-on only, but interested in the details of the fruit business, and so deeply interested at that time that I found it impossible to attend the San José convention last year. I am requested to again speak to you, to say things which, as a fellow fruit-grower, I may think of interest and profit to you. The most important business in which the fruit-grower of California can at present interest himself is that of combination. This subject is in the best of hands, is made a specialty for this convention to discuss, and will have no part in this short paper, which will deal with a few matters of comparatively minor importance. As usual, my topic is that of fresh fruit shipments to the East, the most precarious and least profitable branch of the great fruit industry of California. The principal reason for this condition and the result is obvious. It is the isolation of California. In the old Spanish romance from which the State derives its name, California is described as a distant island, and such it virtually is, separated by a thousand miles of what must always be a sparsely settled territory, from the boundaries of that portion of our country which constitutes our market. As a matter of fact, at the present time the bulk of our product must travel more than twice this distance to reach consumption, but it is this thousand miles of mountain and desert plain, this worse than a deep blue ocean, that forever fixes our isolation. Were it water, it would be better for us, for then we should have a highway open for competition, and water rates of transportation, comparable with those of the Great Lakes between Duluth and Buffalo.

The question of transportation rates on fresh fruit to Eastern markets has been pretty thoroughly discussed for years, and conditions are well known—the growers' condition to the transportation companies, and vice versa. The fact that the volume of shipment holds up is proof that the rate is no more than the traffic will bear. When fresh fruit shipments cease the rate will regulate itself; until then, the hopes for lower rates must rest upon a new transportation line honestly and economically built, honestly capitalized, and out for business. During the season last past the loss to growers and shippers occasioned by the unreasonable length of time occupied by fresh fruit in transit to destination can hardly be measured. It amounts to many thousands of dollars, a loss hardly borne, and inflicted by the transportation companies, probably not with malice, but certainly without cause or reason. This is a grievance that should be more readily cured than the one of exorbitant rates. It does not require reorganization, nor another competing line, nor Government ownership, to restore a time-card. In decent fairness the railroad companies should do this, and without any great amount of knee-bending on the part of the growers and shippers of California. A simple request on the part of the convention, through its Committee on Transportation, should be sufficient.

Closely related to these matters is that of the cost of refrigeration. At one time there was hope that cheaply manufactured liquid air would offer a solution of the question. There seems to be no good foundation for the hope. The refrigerating power of liquid air is not great as compared with that of ice. For the present we are in the hands, and, in a measure, at the mercy of the refrigerator car lines. Their rates are very much too high. Their bills against the railroad companies are believed to be quite enough to pay all their expenses, leaving nearly all of the refrigeration rate as clear profit. This is popular belief and is here purposely given to draw, if possible, an authoritative denial from the lines. On the Eastern railroads there are many car lines in the refrigerating business. In time some of them will find a way to get a foothold in California, especially if they are properly assisted by those most interested, namely, ourselves. I still think as I did a year ago, that Mr. R. D. Stephens' idea was a thoroughly good one. I believe a refrigerator line owned by ourselves would more completely fill the requirements, but we are apparently not quite ready. We are not yet sufficiently organized. We lack the courage of conscious strength, the confidence to take a long step, even though it tend toward freedom. If we delay long enough, perhaps the railroad companies out of California will take up the matter and furnish refrigerators of their own, as is done elsewhere, at a nominal cost. This, perhaps, would be the best solution of the problem. How to bring it about I do not even suggest, but leave the matter in the hands of the very capable Committee on Transportation and Freight Rates. I think it would be wise, at any rate, to ascertain definitely from the railroad companies whether we may hope for any such arrangement. If we may not, then the agitation for a growers' refrigerator line should not cease until the line is a fact. The day of systematic organization is here; with the organization will come the strength and the confidence that strength engenders. The raisin men are one; the prune-growers are united; the orange-growers have a strong combination. The deciduous fruit growers will have their day, and then the orange and deciduous fruit men will own their own car line. It is in the air. If I had had the pleasure of speaking to you at San José last year, I should have spoken very freely in regard to the disastrous policy of sending to the far East such miserable deciduous fruit as went by the trainload during that year. The first shipments of the year were fair in quality and the market was in a very satisfactory condition; then, with the advent of Crawford peaches there began coming carload after carload of uncolored, fur-clothed, little things marked California peaches, that went from 110 to 140 to the standard box. They knocked the market flat, and it never recovered. Hasn't recovered yet. It was a wickedly criminal thing to do, to send such stuff two or three thousand miles, in some cases to markets that had had supplies of good fruit; in others, to markets that, because of the scarcity of fruit in the East that year, took California fruit for the first time—and the last. The truth is, unless your fruit when it reaches the East is first class (in appearance, at least), it had better have remained where it grew. The qualities that recommend it principally are two: appearance, and ability to "stand up" or keep. In appearance it must equal the best of the Eastern fruit, and let me whisper right here, that that makes the standard very high indeed. The best fruit from Georgia, from Missouri, from Michigan, from New York, is exceedingly handsome. The Missouri Elberta peach, at its best, is as handsome a peach as grows in the State of California. We are not alone in the fruit business by any means. The handsomest apples I ever saw were grown near Grand Junction in Colorado. Years ago New York produced nothing better than a Damson or Green Gage plum. They have changed all that, and now market plums and prunes that hold their own except with our very best. One little district extending along Lake Erie for about fifty miles, annually ships 5,000 carloads of grapes. This is not said to discourage, but to warn. With our great disadvantage of distance we are up against a very keen competition, for the Eastern grower permits his fruit to more nearly mature on the tree than we dare to attempt. On the market the fruit will average better than ours in flavor. Do not misunderstand me. No fruit there is better than such of ours as is permitted to acquire perfection on the tree. Theirs is better flavored, because ours is necessarily picked hard, and, comparatively speaking, not matured. As against this advantage which they have over us, we can and do set up the one of keeping quality. After its long journey, our best fruit will stand up two or three times as long as their best. Hence, it is a favorite with the retail dealers and such consumers as purchase by the lot. One other advantage is ours temporarily, that is, we pack fruit better than it is packed anywhere in the United States. Our average pack is better than it was five years ago, infinitely better than it was ten years ago. This refers to the package, wrapping, etc. Even the little peaches of last year were generally well and neatly packed. How long it will be before Eastern growers modify their methods remains to be seen. One more suggestion in regard to package. Apricots and peaches, most frequently the latter, very often become tainted with the resin of the sugar-pine box. I have heard consumers in nearly every State east of the Missouri River complain of the turpentine flavor of our peaches. I have tasted the flavor very frequently myself, and think it should be guarded against by using only selected shook; for peaches especially. No material makes up so handsomely as the sugar pine, but inasmuch as it injures the fruit, it should not be used. I suggest that a lesson might be taken from our butter-packers, who use white spruce. Consumers taste the peculiar resin flavor, and whether they learn, or whether they do not, that it is not a natural but an acquired taint, it makes little difference, they are prejudiced against the fruit. I have never noticed this flavor in fruit sent in ventilator cars, even in sugar-pine boxes, and draw the conclusion that the confinement and dampness of the refrigerator car combine to produce the effect.

We frequently used to see articles in our newspapers bemoaning the fact that the Eastern markets had not been sufficiently exploited in the interest of fresh fruit. Whatever may have been the case years ago, it is not true now. The whole territory is thoroughly covered, and in a competitive way. Earl's men, Porter's men, large and responsible houses acting as district agents of others of our shippers, and many brokers doing business on private account, cover the ground very thoroughly. In the line of citrus fruits, the Southern California Fruit Exchange also has the Eastern territory covered by a very competent corps of representatives. That our fruit sells for no more, and in no greater quantity, is not for the lack of wide-awake, enterprising men to place it. There may be good-sized towns that do not take car lots of our products, but it is not because they have not been worked. It is because of local supply, or because they are in close communication with an auction market, or even another town, not an auction point, but having a firmly established car lot trade. After an exhaustive study of the situation during the past three years, I do not look for any rapid increase in our yearly total sales; I do look for keener competition on the part of Eastern fruit-growers all the time, and I look for occasional spurts of trade arising from crop failures in the East. I therefore believe it is good policy not to plant for the fresh fruit shipping trade, but rather for processing, for drying, canning, or otherwise preserving. Where there is a question arising of shipping fresh, or curing a crop, I should always acknowledge myself in favor of the latter. In this line there is no doubt of our advantage over the Eastern fruit-grower, no matter where he lives. We can put up a better cured or preserved product, at less expense, than he dreams of. With proper organization among the dried fruit men, there should always be a profit, greater or less, for those in the organization. For the fresh fruit shipper there never is, and never will be any such certainty, because of possible Eastern competition; but the chances in his favor will be much greater the more nearly he succeeds in reducing the cost of marketing to a minimum, and the more studiously careful he is in sending such fruit only to the East as will sell in competition with the fine product of a lot of local growers, who are learning year by year, and are so very evidently improving the quality of their goods from season to season.

One other suggestion, and I am done. It relates to competition from a new quarter, which we must, before many years, meet with every advantage we possess and with every effort we can exert. To the south of us lies a country possessed of every condition that goes to make a fruit garden. It is seven times as large as California and has ten times the population. It has magnificent soil, a wonderful climate, splendid possibilities for irrigation, and an immense population of possible agricultural laborers who are willing to work for from 15 to 35 cents gold per day. The Mexican peon will, with proper training, make a very intelligent and reliable orchard workman, fully equal to the Chinese and other imported laborers upon whom we are compelled to rely in California. Every fruit that can be grown in California may be grown to a greater or less degree of perfection in the various parts of, and in the various altitudes of Mexico. They grow there to perfection some fruits that we cannot. Inasmuch as this is but a secondary sort of competition, I will confine myself to a few words only in regard to what immediately concerns us in the way of competition. I have referred to the cheapness of labor. As for the cost of land, I will say that in small lots you may purchase splendid agricultural and fruit lands, under established irrigation systems, with perpetual water rights, the taxes upon which for maintenance are very small, for from $5 to $8 per acre. Other lands, deep, sandy loams, which may be irrigated by water systems not yet instituted, just such lands in appearance as were large portions of our present orange groves thirty years ago, may be secured by the square league for from 10 to 50 cents per acre. Were matters in Mexico to remain in the dormant state which has obtained there since the days of Cortez, there would be nothing for us to consider or to lie awake o' nights about. But they will not so remain. The awakening, as a magazine writer has put it, is already in progress. The native himself did not know what he had, and he was without capital, and is without initiative. But the everlasting Yankee, the once execrated but now welcomed "Gringo," has begun to absorb the facts as to conditions in Mexico, and with his money, and his energy, is already making a great change there. Americans, some even from California, although most of them are from the districts east of us, have been investing in fruit lands—both deciduous and citrus fruit lands. In Chihuahua, the Mormon colonists have made a good start, and already ship their canned goods in wholesale quantities. In Sonora and Sinaloa, fruit-dealers of Missouri have become fruit-land owners. In Jalisco, one of the finest pieces of fruit territory under the sun, Eastern men are investing capital in fruit-growing. In the fruit districts of the Atlantic slope, Boston and New York men are investing largely. At present much of the deciduous fruit as grown by the Mexicans is very common, very poor in variety, mostly seedling stuff. But the way it grows is a caution. The trees are vigorous and bear immense loads. A thousand pounds of peaches to the tree in places is not uncommon. Of course the newcomers plant better varieties. Growers in Jalisco are importing the best varieties of California citrus nursery stock, intending later to bud the native stock. In Morelos, and some other districts, they have the Mexican orange maggot, a terrible scourge, but the Americans who are taking hold in the citrus districts in these States will rid themselves of it in some way. They are the same kind of people that managed to drive the cottony cushion scale from California. They have California's experience to profit by, and their money will employ Lelongs, and Craws, and Comperes, and Koebeles, just as ours has. They will eventually grow good fruit in Mexico, and plenty of it, for they have the conditions necessary, and the sooner we take cognizance of the matter, the better. To the markets of the world, outside of the United States, they will have as free access as ourselves. In the markets of our own country we have a way of holding an advantage by means of a tariff—and this it behooves us to carefully guard. There is now building a railroad having its terminus at Kansas City, Missouri, and Port Stillwell on the Pacific Ocean, in the State of Sinaloa. By this route Port Stillwell will be nearer to Kansas City than any other port on the Pacific Ocean. It will give an outlet for the oranges of northwestern Mexico as short in length to the markets of the East as can be secured for any district in California. The oranges, lemons, and other fruits of the Atlantic slope in Mexico have, by reason of water transportation facilities from Tampico, Vera Cruz, and other points, an advantage in rates, with which we cannot hope to compete, and which will render doubly necessary the strictest vigilance in regard to securing all protection possible, through tariff legislation, and all the consideration we may hope to have given us by the transportation companies doing the California business.

REPORT OF THE COMMITTEE ON TRANSPORTATION.

The following report from the Committee on Transportation was made, through its chairman, R. D. STEPHENS:

SAN FRANCISCO, December 3, 1900.

MR. WM. SPROULE,
Freight Traffic Manager, Southern Pacific Company, San Francisco, Cal.:

DEAR SIR: The sentiment is universal with both growers and shippers that the time made in transporting California green deciduous fruit to Eastern markets during the season just passed was so poor as to greatly damage the fruit, thereby impairing its value to a degree that in many instances the prices it brought entailed heavy losses.

That there must have been some cause for the poor service given is plain, and those most interested are anxious to know what it was, and believing that you are in a position to give the desired information, you are respectfully appealed to to do so. This request is not made in any spirit of prejudice against the company you represent, but, on the contrary, in a spirit of friendly feeling and an earnest desire to learn the cause of the poor service given.

The service was defective by all the lines handling the fruit, including the Union Pacific, and more particularly by the Rio Grande route in connection with the Santa Fé, and from all we desire an expression of what we may expect next season.

In making this request we sincerely hope that you may be able to show that the reason or reasons why such poor service was given is attributable alone to special and unexpected things arising, heretofore unknown, and that they were of such nature as to make it impossible to have successfully counteracted their bad influences at the time of their occurrence; but now, that the great interest you represent, through its experience in the last year, has learned what is necessary to overcome these and all other difficulties that are likely to arise and stand in the way of its giving an improved service, and that it has acted promptly in securing all necessary equipment that will enable it to guarantee a more complete and perfect service for the transportation of green fruit products to Eastern markets.

Another subject that has called forth much adverse criticism is the 26,000 pounds minimum carload for green deciduous fruit. It is claimed that there is no car in service that can properly protect green deciduous fruit from decay, when loaded with 26,000 pounds, during the heated season of June, July, and August; therefore, you are earnestly requested to give this subject serious and favorable consideration.

Respectfully submitted by the Committee on Transportation appointed at the Fruit-Growers' Annual Convention held in the City of San José in December, 1899.

R. D. STEPHENS,
Chairman Committee on Transportation, California
State Fruit-Growers' Convention.

THE RAILROAD'S REPLY.

SAN FRANCISCO, December 4, 1900.

MR. R. D. STEPHENS,
Chairman Committee on Transportation, California State Fruit-Growers' Convention:

DEAR SIR: In reply to your favor of 3d inst. pertaining, first, to the question of time made past season and to be made next season on deciduous fruit; secondly, question of minimum weight to be loaded in car:

I beg to express the regret of this company that the service past season has not been satisfactory to the fruit-growers, and must in all frankness say that it has not been as good service as we would like to give. The roads which transport deciduous fruit were called upon during season just closed to transport probably the heaviest tonnage of all classes of freight that there is any record of, and this was the condition throughout the whole country. It caused a glut of traffic on all lines, so that there was no class of freight which moved with its usual promptness. Under these conditions deciduous fruit shared the slow movement given all the business, except that deciduous fruit even then was given perferred attention and moved much more quickly than any other class of freight, saving possibly supplies for the United States Government.

Within the past two years there has been a marked change in the conditions under which Pacific Coast roads must do their business. The Philippines, and later the Chinese question, also the Hawaiian trade, have changed the current of commercial and industrial activity on this coast to such a degree that it is no longer possible, for example, for this company to obtain its coal from Pacific Coast ports of supply to any considerable extent, and during the past season we have hauled coal daily from Ogden to supply the entire line west of Ogden and as far south as Bakersfield. Hence, to keep the line running we had to turn into the transportation of fuel for our fruit and other trains hundreds of cars and scores of locomotives, which cars in turn had to be hauled back to Ogden, mostly empty, and power was thus needed in both directions.

During the fruit season the Chinese crisis arose, and the calls upon us by the Government for emergency service of men, munitions of war, and supplies, compelled us to put into that special traffic, which could not be held for any other business whatever, an important part of our available power.

During all this time, and for months previous, we had orders placed for locomotives which the great shops of the East were unable to fill, owing to pressure from every direction for the completion of earlier orders, all having been long delayed by the steel mills' inability to supply the necessary material. Even yet this condition continues, engines now reaching us which should have been here in September. We have hauled fruit with passenger engines during the serious difficulties thus encountered, and you can rest assured no delays occurred which this company could remedy.

These conditions, all of a transient kind, produced an emergency which in part could not be foreseen, and for the remainder it was impossible to adjust quickly enough to meet the needs of the season.

We have, however, at the beginning of this fiscal year, an order outstanding for ninety-four locomotives, which will be available before next fruit season. For the transportation of fuel, arrangements have been made for service considerably in advance of our needs, although at greatly increased expense to ourselves in storing so vast a quantity of fuel and paying for it months in advance of its consumption, with all the risk from spontaneous combustion when stored in large coal piles.

The season to come can scarcely present the serious phases of the season past, and we anticipate that during next season we will be in position to give the fruit-growers of California a service over our rails that should be satisfactory. I have no doubt that if you, as chairman, will, after the close of the convention, continue your labors with our connections east of Ogden, you will have no difficulty in obtaining like assurances from them, for I am aware that they were confronted during past season with conditions that are likely to be obviated in the future.

Referring to the second matter your letter discusses, the cars which will be in service next season I understand will be all, or very nearly all, 40-foot cars, whereas the 24,000-pound minimum was adopted for the shorter cars. I presume if we could say to you that the cars in the service would be 40-foot cars, your objection to the 26,000-pound minimum would be removed. In a general way can say that so far as this company is concerned—and in this letter I of necessity speak only for it—it is far from our intention to maintain a minimum on deciduous fruit that cannot be carried with safety in the cars. The 26,000-pound minimum at present governs only after July 1st, the idea in fixing it at that date having been to carry the lower minimum while the early tender fruits were moving. If the date set for the 26,000-pound minimum is still too early in the season, it is a point which will be gravely considered. Our understanding is, however, that the carrying qualities of the fruit this season were impaired by the two seasons of partial drought this State has passed through, and the experience of this year is not a fair guide for the future. The auspicious rains of this winter thus far, happily give encouragement for the hope that next crop will not have the handicap of inadequate moisture to contend with.

I beg to assure you in conclusion that this company takes now, as ever in the past, most serious interest in the development and prosperity of the deciduous fruit interests.

Very truly,

WM. SPROULE,
Freight Traffic Manager.

On motion of EDWARD BERWICK of Monterey, the report was re-referred to the Committee on Transportation for consideration.

NECESSITY FOR EXPEDITED SERVICE FOR FRESH FRUIT SHIPMENTS.

By HON. ALDEN ANDERSON, of Suisun.

I have been requested to address you upon the necessity of an improved or expedited service for Eastern fresh fruit shipments. This is a subject which vitally interests every grower and shipper of fruit in California and one upon the necessity of which there is little diversity of opinion. We have watched the evolution in the methods of shipping and of selling our products in the Eastern markets. We have seen the cars used for this service improve from the old combination cattle car, in which all of the first shipments were made, through the various stages, to the light and satisfactory car of the present day. We have seen the individual consignee or firm change for the quick and efficient auction salesroom, and we regret to say that transportation service has not kept pace with the other improvements.

From the time when our Eastern fruit shipments began to assume large proportions, until the last few years, there was a unity of action among the growers and shippers to obtain, first, a reduction of freight rates to such a figure as would allow the shipment of large quantities, and secondly, the securing of transportation services that would insure the arrival of our fruits, when properly matured and packed, in the best possible condition in the Eastern markets. As I have said before, the first shipments were in combination cattle cars on freight trains and were of the hardier varieties of fruit, mostly fall pears. With the beginning of the shipment of more perishable fruits, we had service of ventilated cars on passenger trains. As shipments increased, there were provided what were called expedited trains, which were obliged to contain at least fifteen ventilator cars and which were supposed to run on a schedule time approximating six days to Chicago and eight days to New York. The following season the number necessary to make up expedited trains was reduced to ten cars.

The results under these arrangements were not regular and entirely satisfactory, because fruits that under normal conditions would carry to their destination and arrive in good order, would, if they encountered a spell of hot weather, become heated and entirely worthless. The first refrigerator cars of deciduous fruits in any quantity were loaded and shipped from California in 1888, and the results were so satisfactory that this class of cars came largely into use, and to-day practically all shipments are made in them. They are now so constructed that they can be used as ventilators or refrigerators, or changed from ventilator to refrigerator en route.

As the refrigerator car came more and more into use, the expedited trains were discontinued, and we have had a service varying from fair to very bad since, until I am safe in saying that the service of last season was the most irregular, erratic, and unsatisfactory to growers and shippers of any year since shipments have assumed large proportions. The effects of the superior carrying qualities of the refrigerator cars were thus neutralized. The expectation was that when the shipments were successfully transported in refrigerator cars the growers would be able to gather the fruit in a more matured condition, and would thus be able to deliver it to the consumer with a higher degree of excellence as regards quality, and a more merchantable condition for selling.

It is unnecessary for me to relate facts and figures. You know that this year when a shipment was made to Chicago or Missouri River points you would hear of it any time in from nine to thirteen days, and when a shipment was made to New York or Atlantic Coast points it would arrive any time from eleven to nineteen days afterwards. The length of time in transit detracts from the value of fruit, and the irregularity tends to demoralize markets. For instance, I shipped a car of Bartlett pears from Suisun to Cleveland, Ohio, on July 11th of this year and a similar car to the same place on the 14th. Both cars were received and sold on Thursday, the 26th, following, one car being fifteen days and the other twelve days on the road. Both were reported over-ripe and in poor condition, and sold accordingly. The receipt of the fruit in such an irregular manner caused two cars to be sold on the same day, when they should have been sold three days apart. The length of time required in transit caused the fruit to be exposed for sale in an over-ripe condition, necessitating its immediate use, and it had to be sold to peddlers and the like, which always means low prices.

Many cars of fruit that were sold f. o. b. to outside Eastern points were rejected simply on account of being over-ripe. These were generally diverted to the auction rooms and helped to still further depress the market. These are only instances. All shippers have had the same experiences; in fact, it was the general experience this year. They serve to illustrate the point I wish to make, which is, the necessity of quicker transportation and a schedule time for the shipment of our fresh fruits.

The fruits which bring the best returns to the grower and shipper of California are those which arrive in such condition as to allow of their being rehandled or reshipped from the distributing points in the East. At present the rule is to pack the more perishable fruits as green as possible, and much of it arrives at its destination in an insipid and almost worthless state, thus limiting its sale and injuring the market for all California fruits. If we had better time a better quality of fruit could and would be shipped, because it could be picked in a more matured state, and it would be received in better condition, thus enabling it to be rehandled and more widely distributed.

We should be assured of a service that we could calculate, barring accidents, just when a car should reach a given point. The receiver would then know how to arrange for its sale, and the shipper would know from the character of the fruit shipped to what point it would carry in a good condition, and when and where to have the car refrigerated. The expense of refrigeration would be lighter and the danger of glutting the markets would be greatly lessened.

A quick transportation service would be beneficial to all the factors engaged in the business; to the growers and shippers quicker returns and better prices, and to the transportation companies largely increased shipments. I believe that I am safe in saying that there would have been 1,000 cars more of fresh fruit shipped from California the past season had we had a reasonably fair service, and this loss to the transportation companies is one they cannot make up in any other manner, as the bulk of it was dried, making a greater quantity and lower prices for the dried product.

If this defect is not corrected, shipments of the more perishable fruits will decrease rapidly in the future. Shipments would have been much lighter this year, after it was demonstrated what the service would be, had not shippers had contracts and obligations which had to be fulfilled.

We had a large crop of fruit in California the past season, and there were good crops in most of the fruit-growing regions of the Eastern States. Large prices were not expected, but an examination of the prices realized for all varieties of California fruits that arrived in a merchantable condition, shows that the prices, with good transportation services, would have been remunerative. Prices for the better carrying varieties, such as late pears and grapes, were very fair.

Apparently there is no effort made to favor the shipment of perishable fruits, for at the time we received some of our poorest service, we had cars of dried apricots delivered in New York in thirteen days. We have had no reduction in freight rates since 1887, and while the enormous increase of shipments of green fruit would seem to have warranted a reduction ere this, growers and shippers generally, I think, would waive the discussion of that subject if they could be assured of an expedited service and schedule time.

The question is one of importance, not only to the growers and shippers, but to the transportation companies as well, and I believe that if the importance of this matter can properly be shown to the transportation companies, they will coöperate heartily in helping to secure the desired relief as a measure for their own good.

General N. P. Chipman moved that copies of Mr. Anderson's address be furnished to the Southern Pacific Railroad Company and to the Santa Fé Railroad Company, which motion was carried.

DISCUSSION ON TRANSPORTATION.

MR. NAFTZGER. Two or three things were noticeable to me in connection with the reading of those papers. One was that there did not appear to be any wild enthusiasm in this audience over the letter from the Traffic Manager of the railroad. The other papers seemed to get applause. One other thing that I noticed was that while the paper read by Mr. Anderson and also the paper by Mr. Gester set forth the fact of a bad service, insufficient and slow, the report of the Fruit-Growers' Association, while pointing out the same state of affairs, was rather apologetic. In other words, I think it alleged three or four causes for bad markets—first, the bad packing, and I observed that the growers were criticised pretty severely for that. The other causes were the slow time and the cost of transportation; but there was more or less apology for them in the document. Now, I am not censuring the document, but I am calling attention to this to know whether that is the state of the case.

MR. STEPHENS. What particular paper are you referring to now?

MR. NAFTZGER. To the report of the California Fruit-Shippers' Association. It is stated in that paper that it is claimed that refrigerator charges are not excessive and freight rates are not too high and they could not expedite the service given. Now, the peculiar thing about that is that we have heard the same thing in the south for two years. It is said in this letter from the Traffic Manager that the chief cause of the poor service was the Chinese imbroglio. Now, I was trying to figure out how that should have caused our insufficient service as much as two years ago, and I don't see it. Now, if there is anybody here connected with any of these associations that has any doubt as to whether the refrigerator tariff is excessive or not. I refer him to the testimony taken in the case of the Consolidated Forwarding Company in Southern California before the Interstate Commerce Commission. I will not ask you to take the testimony of the plaintiff; but that of the President of the C. F. X. car company, and I shall not ask you to take his unsupported statement that it is not too high, but I will ask you to take his figures as to what it costs to do the refrigerating, and compare them with the tariff, and then figure it out for yourself. I am prepared to say further, that I know it is excessive, because I have done that kind of business myself. I know that the profits are out of all proportion to any other business that relates to the fruit industry. Now, I want to call your attention to these things and have you look at them for a moment. If the rates were right when the fruit industry of California was in its infancy, they are excessive now. If the service could have been fair and proper then, it is difficult to see why it could not be at least reasonable now. The same thing prevails in the south as in the north. A gentleman said to me to-day that the railroads claim the cause to be a shortage of cars. Another man told me within four days in Los Angeles that they have a thousand cars lying idle on the tracks, and yet it takes fourteen days to get a car of oranges to Minneapolis or Chicago. Chinese trouble, I suppose—it is always in evidence—there is always something. Now, I would like to see the convention this afternoon undertake some system of organization of the varied fruit interests of California which would make it possible for us to find out why these things are so. I sincerely hope that you people up here, in your green fruit shipments, will get a better service than we dare to hope for in the south. Then, regarding this minimum proposition, it is the same old story and the same things have been argued to us. We had a promise nearly a year ago when the minimum was increased to 26,000 pounds, and we tried to show the danger and loss that would ensue; we had the solemn promise of the managers that they would watch that proposition. We never heard anything and never could get anything out of them. They said they would watch that, and if it appeared that the increased minimum was a damage to the fruit they would correct it. We pointed out any number of cases, but they did not correct it. These are the facts that confront us in handling this business. I think there should be some sort of concerted effort on the part of the fruit-growers of California, who represent one of its most important revenue interests, to find out how far the railroad companies are permitted to use their functions without reference to our interests. If the right is on their side, let us find it out; if the right is on our side, why shouldn't we get together and find that out and insist upon what belongs to us and no more.

Mr. BERWICK. I am no lawyer, but I recall seeing in some contracts years ago, a clause that read like this: "Time is the essence of this contract." Now, I think, gentlemen, we should have some clause of that kind in all our contracts with the railroad company, that "time is the essence of this contract," and it is their part of the contract to watch the time. If they cannot make the time, their service ceases to be of any value to you. They should receive no value for non-service. I don't know that they will ever assent to anything of that kind, but it will amply pay the people to have something of that sort in their agreements with the railroad company.

Mr. JACOBS. It behooves the fruit-growers and shippers to insist that the transportation companies make better time; for, unless they can do so, the industry stands practically ruined. We must agree that the railroad company's interests are identical with ours, for if the business is ruined they lose the traffic. The question is, are we pursuing the right method in bringing the matter to their attention. On the 1st of January new blood will be injected into the management of the Southern Pacific Company, one of the best-known managers will be located in San Francisco; and if he follows out the same ideas he adopted on the road which he manages in the East, there is no doubt that a great change will take place, and this matter should be called to their attention.

MR. NAFTZGER. Do you shippers designate the lines over which your shipments shall travel ?

MR. BOOTH, OF SACRAMENTO. As a general rule.

MR. NAFTZGER. Wasn't it a fact that there was an express agreement by which the carrier was to have a certain per cent of your shipments, the Santa Fé?

MR. BOOTH. I don't know.

MR. NAFTZGER. I think you will find that it is a fact, the same as the agreement in the orange business in the south. Now, I have no intention of attacking or criticizing the report of the Shippers' Association, but I wanted to draw attention to the general situation, and I wanted to arouse some expression along the line if possible, and I accomplished my purpose. Another thing I want to say is that down south we have been trying to remedy these matters; and I must disclaim emphatically that we have neglected to bring this to the attention of the carrier. I don't know whether we have done it in the best way or not. But we have gone around to their offices for years past; we have sent them memorials; we have waited upon them with committees; we have urged the community interest between the carriers and the growers and shippers. For the last six or seven years I have tried to present these matters personally to the transportation people, and I have used every form of expression. I do not speak any language but English, but that has been, so far, entirely inadequate to accomplish any results in the way of relief. The conditions have grown worse. The minimum has been steadily increased without any reduction in the rate. The United States court has said that any change in transportation that works for the benefit of the carrier without reducing the rate is an increase in the rate. The increase in the minimum has been made because it was advantageous to the carrier, and it has been to our detriment. I have been studying these things for the past seven or eight years, and it is my belief that when the fruit-growers of California get together on a definite proposition and put their plea into the right form they will get relief.

MR. STEPHENS. The proper form would be for every fruit-grower in the State to unite with every other fruit-grower. Then they would listen to you. I agree with Mr. Anderson that we would for the time being be willing to waive all efforts for reduced rates for transportation, even with the enormous rates charged, if they would give us an opportunity of testing this one question of more rapid transportation to the East. If they will now give us an eight or nine day rate to New York and a six or seven day rate to Chicago we are perfectly willing to try that and see what the result will be. If the result is satisfactory and it will enable the fruit-grower to pay the interest upon the money which he owes, and keep soul and body together for the members of his family, you will probably hear very little complaint.

Mr. BOOTH. I have something here which touches upon what Mr. Stephens has been saying. In looking over my accounts there was one car, particularly, that I tried to investigate closely, and I got returns from that car in a day or two. The letter I have here is regarding a car of mixed fruit. This car was shipped in July, and during July there was about seventy cars per day going out, and the loss on some of them would average $200. This is one of the cars. The letter is dated November 5th. It is to a friend of mine connected with one of the transportation companies:

> Please note the prices on inclosed statement, which has only just attracted my attention. Can you give any reason why there should be such a wide range in the prices on this car? Same class of fruit; same mark and same shipment. If you have any correspondence or can throw any light on this matter, you will greatly oblige.

The answer comes as follows:

> Replying to your valued favor of the 6th inst. in regard to condition of F. G. E. car No. 17,938 from Florin, sold in Boston, August 13th. There certainly was a wide range in prices on these pears, but for the very reason that the top tiers were in such dead-ripe condition that they were mushy and wastey, and in order to get a decent average on the lot we had to sort them out separately. As we have often explained to the shippers, Boston is a market which needs and uses a great many green pears for shipping into the country, and during the summer season the best trade is out of the city and in the beach and mountain resorts where these pears are shipped. Consequently, it is not a good market for dead-ripe stock, and of course, when they are not only dead ripe, but mushy and wastey besides, they are practically worthless, and none but the lowest class of peddlers will bid upon them at all. The writer very well remembers the sale of this car from the fact that the party who purchased the sixty boxes at $1.95, put up a vigorous kick about them the next day following the sale—stating that while he thought he was buying green pears, at least seventy-five per cent of them turned out dead ripe and rotten. And we would also add that these sixty boxes were just the two bottom tiers in the car. Those that sold for $1.50 were the third tier from the bottom, and those that sold for 30 and 20 cents were the two top tiers. We would also like to call Mr. Booth's attention to the fact that this car was shipped from California July 28th. Unfortunately it did not arrive in time to sell on Friday, August 10th, and had to be held over until Monday, August 13th, making sixteen days between time of shipment and sale here. At that season of the year it is not much to be wondered at that the condition was very poor upon arrival. We find by figuring this lot up that they averaged about $1.05, which was just about freight and refrigeration charges. Considering the quality of those pears, as we very well remember, and the condition of the market, the ripe stock as well as the condition of the fruit, we think Mr. Booth is very fortunate in getting out whole.

From this car of fruit I got only $12.41, on account of the long delay in reaching the market.

Mr. STEPHENS. The gross of the car was $12 more than the expense, and you received in return for that shipment $12. In that, you were lucky. In some instances they do not get $12 even, but the shipper is called upon to pay the freight and commission, besides the entire loss of the fruit.

Mr. BERWICK. I have been attending these conventions a great many years. We are told to-day that if we can agree upon a certain proposition to lay before the railroad company, we shall command their respect; now, I can recall that for years and years we have been agreeing and agreeing and commanding their respect, and that is about all that we have done. We should combine our efforts and make one demand for what we believe we need, and with the combined force of the fruit-growers behind that request, we shall have some weight.

Mr. JACOBS. If the fruit-growers from the different parts of the State would combine and hold a meeting and adopt resolutions and refer their needs to the Southern Pacific Company, I think some good would come of it. In the past when I have presented matters to them, I have been able to accomplish something, because I have gone about it in the right manner, and I believe if the growers will present this matter in the right way, they will know just where they are. Mr. Booth has spoken about his shipment of a car to the East, and of the slight return. He has not reached the point; it seems to me when a car is delayed, we should know it. The railroad company have a train schedule, and they know how many days it will take to send a car to Chicago. If a grower puts a car on the road, he can refer to that schedule now in operation by the railroad company and learn just where the car is at any time. The railroad company knows where it is, and if they report to him that its journey has been retarded, or that it is not making the headway it should, then is when he should make the kick to the company. I believe that the railroad company should notify a grower when his cars are being delayed on the road for any reason.

Mr. BERWICK. Regarding the appointing of a new Committee on Transportation, in that connection I would like to suggest that we invite Mr. Sproule of the Southern Pacific Company to meet us here in the convention to-morrow, and let him hear our side of the story.

Mr. SPROULE. I am here, sir. I felt I had some measure of right to be here, first by the courtesy of your invitation, and secondly, because I am a fruit-grower myself; sometimes, I say I have got a ranch, and other times, I say the ranch has got me. However, I came, realizing the importance of the convention. I have heard suggestions here that a meeting should be held in the various parts of the State, and each of these meetings pass resolutions, which should in due course reach the railroad companies. I just want to tell you there is no convention pertaining to this subject and no segregated series of conventions that can carry with it any considerable degree of force as compared with the expressed views of this convention, which represents the fruit-growers of the State. We have heard a great deal about the situation in Southern California, so much so that I thought I was in a convention of orange-growers. The situation down there thus far has resolved itself into nothing but litigation and discord that such conditions bring about, and I can assure you, gentlemen, that for myself and the company I represent, the moderation of statement in the reports that have been made here and in the position taken by the leading fruit-growers of this part of the State upon the floor of this convention is the very best way of reaching the railroad and have it realize that it is dealing with its friends. Personally, I believe I have the pleasure of knowing most of the leading fruit-growers in this part of the State, and any serious expression from them upon the subjects that are common to the shipper and the railroads, whether the interests are mutual or not, is bound to be received with the respect and consideration of which it is worthy. There is a disposition that is very natural, and that is to blame the initial carrier for all the troubles in transportation of fruit to the East. It is natural, because that is the carrier with which you come in direct contact; but I wish to assure you that I do not desire to shoulder upon any one any part of the responsibility that belongs to the company I represent, when I say that during the past season the burden of slow service has to be shared by the lines east of Ogden just as much as by the lines west, and the farther east we went the greater the difficulty became, because this has been a very unusual season. I was unable, owing to prior engagements, to be here when the session opened this afternoon, but from what I have heard I gather that a letter from myself was read to the convention. That necessarily was but a skeleton statement. I heard some fun poked at the Chinese question. Perhaps I ought to say that that was not brought in for a mere pretext, but you well know the sudden conditions which arose in the Orient which caused the Government to demand of the overland carriers very heavy service in carrying thousands of troops and hundreds of cars of supplies, and that means the transference of a great many locomotives from the normal traffic of a road. We have had as many as thirty-five locomotives at one time tied up in this way. I mention this to show you that that was said in all seriousness and is a fact. It is a kind of service that we are not likely to be called upon to perform again. We have also had a standing order at Ogden for 2,000 tons of coal a day. If you will figure what that means in the way of taking power out of commercial service and hauling westward the fuel that hauls your fruit to the East, you will see we were face to face with a condition that could not be ignored. The slow time made by the fruit is a matter of regret to us. It is a matter that was unavoidable, and service this season has been more expensive to us than in previous seasons. Owing to the conditions with which we are confronted, we have placed such orders for power and made arrangements as will gradually lead up to improved conditions during the coming season, and we have every reason to believe that we will be able to meet your wishes during the coming deciduous fruit season, and at the end of the year your attitude toward this question will be very different from what it is now. I have heard various expressions as to the time that should be made, six and seven days to Chicago, and ten and eleven and twelve days to New York, showing the divergence of opinion among the shippers; that is making clear one thing and that is, the shipper naturally desires the quickest time he can get. Now, we did try what is known as the expedited service for one period for ventilated cars; it was a failure. We made five days to Chicago; they cannot be run on regular schedule time. It was a failure for two reasons: first, the time was faster than we should have undertaken, and the time, while it approximated five days, was not accurate. Secondly, the shippers who used those trains and got their fruit into Chicago in five days found it competing with fruit which had gone on regular trains and started one, two, and three days before, and they had no substantial benefit from it. So it dropped of its own weight and inutility. Now, we believe what the fruit-growers want is a uniform schedule, so that they may know with a reasonable degree of certainty that the fruits which were shipped day before yesterday will not come into competition with fruit shipped to-day, but that fruit in the order in which it goes forward will, as near as may be, be delivered at its destination train after train. There are reasons which have not been developed here since I have been in the hall for some of the irregularities in transportation. One great reason has been the tendency of shippers to get the fruit out at the last moment from the shipping point; they bring their fruit to the train just in time to miss a particular train and it is then held far into the next day, or if we do start it that night, it gets to destination just in time to miss the market there. Another thing, there is a great deal of diversion of cars of green fruit in transit. Each year that factor in business seems to develop more and more. The shippers will start a car to Chicago, Kansas City, or some other point, and if the market is not satisfactory, they hold the fruit and hearing of some other point where the market is all right, they direct it to be shipped there. Now, all these delays are held up against the carrier. If you will remember these things and take into consideration when and how some of your fruit is delayed, and why, you will probably develop some facts with which you are not now familiar. However, when all is said and done, I would assure you that whatever it may be your pleasure to want, we will be very glad to take up the matters and not stop at Ogden, but also take up the different subjects with our connections farther east. I expect to be East in February or March, and will be glad to make that a part of my business.

Mr. BERWICK. Is there any hope of your company being willing to accept a time limit and paying a forfeit if they exceed that limit?

Mr. SPROULE. Not the slightest.

Mr. BERWICK. Isn't it a fact that in shipping green fruit to the East, your company gives no preference to it over a car of flour or hay or anything else going in that direction?

Mr. SPROULE. That is a mistake; on the contrary, the green fruit has preferred attention over everything but passengers.

Gen. CHIPMAN. In 1890, our total shipments of fruit from this State amounted to 16,000 carloads, including garden truck. They now reach 50,000; there is an enormous increase. Mr. Sproule tells us that we should impress upon the transportation lines the importance of this industry. We want him to realize that we have no access to those people, and can only speak through him or his company, and must look to his company, with whom we start our shipments, to see that they go to their destination. We want Mr. Sproule to go back to his office feeling that we are in earnest, and if we can get such service as we desire from the carriers, the shipments from this State will be greatly increased.

Mr. BERWICK moved a vote of thanks to Mr. Sproule, which was carried.

FREE MARKET.

C. W. Childs offered a resolution favoring a free market, which was referred to the Committee on Resolutions.

STANDING COMMITTEES.

The following names were announced as members of the various standing committees of the convention:

On Marketing.

A. H. Naftzger, Los Angeles.
Frank H. Buck, Vacaville.
William Johnston, Sacramento.
H. P. Stabler, Yuba City.
G. W. Hutchins, Marysville.
M. J. Daniels, Riverside.
N. W. Blanchard, Santa Barbara.
I. R. Baxley, Santa Barbara.
George D. Kellogg, Newcastle.

On Transportation.

R. D. Stephens, Sacramento.
Alden Anderson, Suisun.
A. H. Naftzger, Los Angeles.
Alexander Gordon, Fresno.
William B. Gester, Placer.

On Legislation.

PROF. C. W. CHILDS, San José.
JUDGE J. R. LEWIS, San José.
JOHN MARKLEY, Sonoma.
H. P. STABLER, Yuba City.
G. P. HALL, San Diego.

On President's Address.

E. M. EHRHORN, San José.
JOHN SWETT, Martinez.
ALEXANDER GORDON, Fresno.
RETURN ROBERTS, Madera.
R. D. STEPHENS, Sacramento.

On Resolutions.

WILLIAM JOHNSTON, Sacramento.
ALFRED BARSTOW, San José.
JOHN SWETT, Martinez.
J. F. BOGUE, Marysville.
G. P. HALL, San Diego.

The convention then adjourned to Wednesday, December 5th, at 9:30 o'clock A. M.

PROCEEDINGS OF SECOND DAY.

WEDNESDAY, December 5, 1900.

The convention was called to order, as per adjournment, at 9:30 o'clock A. M. President COOPER in the chair.

The subjects under consideration were: Organization and coöperation among producers; Foreign competition; California canned and cured fruit interests. The subject was opened by an address by Judge H. G. Bond of San José, President of the California Cured Fruit Association, entitled

THE YEAR'S OPERATIONS OF THE CURED FRUIT ASSOCIATION.

BY JUDGE H. G. BOND, OF SAN JOSÉ,
President and General Manager.

In accepting the invitation to speak to you on "The Year's Operations of the Cured Fruit Association," I assumed that many of the delegates to this convention would be members of it, and that what I might say might be taken as a prelude to the report that will be made to it at its next annual meeting.

Any opinions that I may express upon policies that have been, or that ought to be, pursued, may be modified by the additional experience which the completion of the year's business will furnish. During the few months I have had charge of the business of the Association, I have modified my views as to the best method of transacting some branches of it—practical experience has suggested improvements that have been adopted—and a wider knowledge will, no doubt, disclose other changes that it will be wise to make. What I may say, therefore, relating to matters that are open to discussion, should be thought of rather as suggestions to be considered than as dogmatic conclusions.

The object of organizing the California Cured Fruit Association was to secure a better price for the cured fruit products of the State. The large increase in the production of the peach, the apricot, and the prune, had made the marketing of these fruits at fair prices practically impossible. The competition caused by all the growers offering their crops for sale at the same time, prevented them getting either a fair or uniform price. The grower whose necessities forced him to take any offer he could get, fixed the limit at which sales could be made, and whenever the crop was large, the struggle to sell constantly depressed the market, until the grower was compelled to take a price that left him no profit. To overcome this condition, the growers decided to unite in a coöperative movement that would put the sale of their product in the control of a central management having the sole right to name the price at which it should be sold. There was no purpose in this movement to eliminate any factor in the dried fruit industry. It contemplated the use of the packers and brokers in the selling of its product, as formerly, but it fixed the price at which the products should be sold in the market, and named the compensation that the packer should receive for his services. Instead of the packer fixing the price at which the grower could sell his product, the grower fixed the price at which the packer could buy it, if he handled it at all.

To carry out this purpose the California Cured Fruit Association was formally organized on the 27th day of last January, under the statute authorizing the formation of coöperative associations. The advantages of organizing under that Act were, that it gave to each member an equal voice in the management of the affairs of the Association at its membership meetings; and except when authorized by a majority vote of the members, prevented the incurring of any indebtedness for which the members could be held liable.

The first act of the management, after the organization was perfected, was to conclude contracts with sixty-five packers in the State for handling and marketing the products to be controlled by it. No contracts were made with packers who would not agree to limit their business in dried fruits to those that would be handled by the Association. Soon after these contracts were executed, an inquiry into the packers' methods of business, when in competition with each other, developed the fact that it would be impossible to maintain uniform prices in the sale of fruit, if each packer were to act independent of and in competition with the others. The packers appreciated the difficulty, and to avoid the apprehended trouble, it was suggested that they pool their earnings and do their work through a corporate organization. This suggestion was acted upon, and the California Packers' Company was duly incorporated. A contract was then made with this company which superseded the several agreements previously made with individual packers. The change thus made greatly abbreviated the labor of the management of the Association, as it left but one party to deal with instead of sixty-five.

By pooling the sales, and limiting each packer's interest in the net earnings of the Company to his pro rata share, according to the number of cars allotted to him to sell, all incentive to cut prices was removed.

As soon as the Association was organized, a systematic plan of canvassing for members was agreed upon and vigorously carried out throughout the State, until the 18th of June, when it was decided that the Association would handle the prune crop of its members this year.

The canvass developed the fact that the growers were more ready to contract for the delivery of their prunes to the Association than for their peaches and apricots. And it was found on the 1st of April, the time fixed for deciding whether the Association had secured seventy-five per cent of the acreage in bearing of any of the fruits named, that it had less than twenty-five per cent of the acreage of the peaches and apricots, but that it had under contract seventy-five per cent of the prune acreage. It was decided, therefore, to discontinue the canvass for peaches and apricots, and to confine the canvass thereafter to obtaining additional contracts for prunes.

To continue this work an extension of time was required of the Packers' Company, as its contract with the Association was conditioned upon its securing ninety per cent of the prune acreage in the State by the 1st of April. This consent was readily given, and renewed from time to time, until the 18th of June, when the acreage contracted for was accepted by the Packers' Company as a sufficient compliance with the terms of its contract in respect to the acreage to be controlled by the Association.

At that date 3,158 growers had become members of the Association, and had contracted to deliver to it their respective crops of prunes for the term of two years. These contracts included a total acreage of 49,845 acres. Since that date 465 additional members have joined the Association, who have added 5,825 acres to its control, making the total number of acres controlled by the Association 55,670. This, we believe, gives it ninety per cent of the acreage in bearing in the State for this year. I speak of this year, because in estimating the bearing acreage in the State, that south of the Tehachapi Mountains was omitted in the calculation, there being no crop in that section. Another year that portion of the State will need to be canvassed, if the present percentage of control is to be maintained.

The method of doing the business of the Association is as follows: The State is divided into three districts. The division is based upon the qualities of the prunes grown in the several localities included in the different districts, as recognized by the trade. The management has not assumed to pass its judgment upon the comparative qualities of prunes raised in any section. It has made the difference in prices in the different districts to conform to those previously established by the trade demand.

There have been some complaints of these differentials; some have thought them too great, and others have considered them too small. The object sought in making them was to equalize the demand according to the relative production of each section, and to insure proportionate sales in each locality. The sales made to date confirm the correctness of the judgment of the board in the prices named, for the sales that have been made have been in about equal relative proportions.

Special attention has been given to the establishment of a thorough system of inspection. The object of it is to insure the delivery of the fruit in proper condition; see that proper weights are given; that the gradings for size are accurate; and that each box or bag of fruit shipped is of uniform quality and size, securing to the purchaser a homogeneous package. The rules under which the work in this department has been done have developed some dissatisfaction with a few growers, who have insisted in sending their prunes to the warehouses insufficiently cured. The most of these cases, I am satisfied, arose from carelessness, or from ignorance on the part of the grower of what constituted a properly cured product.

The importance of a thorough inspection cannot be overestimated. If half-cured fruit is received, graded, and mixed with other fruit of like grades, the fermentation that is sure to take place in it will, more or less, permeate the whole mass with which it is mingled. When this fruit is shipped, it is liable to be rejected by the purchaser for its inferior quality. So that its rejection at the warehouse door is a matter that concerns every grower in the Association; because when this fruit is once mingled with a mass of other fruit, and causes it to ferment, or mold, the loss has to be borne by the members as a whole, and not by the individual whose fruit has caused the damage. When his fruit is received and graded, and mixed with other fruit, its identity is lost, and any damage accruing from it must be borne by the Association. To prevent this injustice, rigid rules of inspection have been enforced. The number of rejections, however, has been comparatively small, much less than was anticipated before the fruit was ready for delivery. Another very appreciable advantage from this system of inspection is the insuring of uniform quality and size in each package shipped, thus giving to the Association brand a reputation with the trade that has secured to it an advantage in the market over fruit offered by outside packers. Some reports have been received from purchasers that they were offered prunes at a quarter of a cent less than Association prices, but they preferred to buy fruit with the Association stamp, as they could rely upon it being what its brand represented it to be.

I think I can fairly say that the inspection department has given substantial satisfaction to the grower, the packer, and the purchaser.

The method of handling fruit is to inspect it at the warehouse, as delivered, to determine if it is properly cured. If accepted, it is then graded and weighed, and a graded warehouse receipt is made out in triplicate, one of which is issued to the grower, one sent to the Association, and one kept by the Packers' Company. As the fruit is graded, it is transferred to bins containing prunes of like quality and grade, where it remains until required for shipment. It is then packed in boxes under the supervision of the inspector, who is required to see that each package is of uniform size and quality. It is then loaded on the car, the weight, number of packages of each size, and the car number being reported by the inspector to the Association. The bill of lading is taken out in the name of the Association, and, when the car of fruit is paid for, which must be done before the car leaves the yard, the bill of lading is indorsed by the Association to the party making the shipment.

An account of the work done in each district is kept separate, and an individual account is also kept with each packing-house and with each grower. From the graded receipts of the grower, postings are made directly to his credit in the individual ledgers. The total receipts and the total sales of each size and quality in each district and of each packing-house in each district are footed daily; also, the totals of the several districts, giving the aggregate receipts of the State. The same footings are made daily of the sales, and from these footings a tabulated statement is made out daily, showing the number of pounds of prunes of every quality and grade received and sold in the State, and the amount on hand as distributed in the several warehouses of the Packers' Company. The money received from sales is deposited in the banks of the different districts, and, as near as practicable, the money from each sale is placed in the banks in the towns from which the fruit is shipped. This avoids drawing from the local banks the money for moving the crop grown in that vicinity, and enables them to extend accommodations to the growers and packers that they could not do if their available funds were required to move the crop.

The graded warehouse receipt has furnished the grower a basis of credit upon which he has been able to secure advances on his fruit. It is not the equivalent of an ordinary warehouse receipt that can be used as a collateral security, because the word "non-negotiable" is stamped on the face of it. It is therefore only an evidence of credit upon the books of the Association, but as such has been available as a basis of credit. The method that has usually been followed in using this credit is, for the grower to give his note for the advance made to him, accompanied by an order on the Association to pay the lender the amount expressed in the order out of the first money due from the sale of his fruit. This order is sent by the lender to the Association for acceptance, and, as accepted, is noted against the account of the borrower. Out of the first dividends due the borrower the money is paid to the party holding the order. The balance, if any, is paid to the borrower. Fifty per cent advance upon the value of the crop, as computed by the Association prices, has been readily obtained from the banks by any one who desired it.

Dividends have been paid as fast as money has been received in amounts sufficient to warrant them. The dividends that have been made to date have been paid upon the basis of weight; but when each member has been paid this first installment, all subsequent dividends will be made upon the basis of sizes. The sum already paid to the growers amounts to $726,127.53.

The price paid the Packers' Company for handling and marketing the crop, in case it sells the whole of it, is $11 per ton. This sum is apportioned as follows: $5 per ton for receiving, grading, weighing, warehousing, sacking, and loading on the cars; $5 per ton for selling; and, in case the Company sells 60 per cent of the crop, it is paid $1 per ton as a bonus; if it sells 80 per cent, another dollar, and if it sells all of the crop, it is paid a third dollar; but if it fails to sell 60 per cent it receives no bonus.

The tonnage of the year's crop will exceed that of last year. If the weight of the small sizes, for which no prices have been made, and which may be converted into a by-product, is deducted, the remainder will be very little greater. As to the prospect of selling the entire crop, any opinion must be largely a matter of conjecture. I am assured by some of the most prominent members of the Packers' Company that the outlook is good and that they expect to sell it all. One fourth of the entire crop of the State has been sold by the Association already, in spite of the strenuous opposition of the outside packers.

The obstacles with which the Association has had to contend have been both numerous and formidable. It has had to compete with an unusually large crop of fruit of every kind throughout this country and Europe. The prune crops of France, Bosnia, and Servia are unusually large, and, as a consequence, the price of prunes has been too low in Europe to admit of competition from this country. Last year, Europe took from this State 1,200 carloads of prunes; this year, only about one tenth of that amount has been taken. The yield of fruit in the United States is exceptionally large, particularly the apple crop, which is the greatest competitor of the prune in the market. The prune crop in this State is large, with a large percentage of small sizes. But the greatest drawback to making sales has been the competition of the outside packers. As soon as prices were made by the Association, they were cut by the outside packers $10 per ton. This discount naturally diminishes the sales of the former, and, coupled with reports persistently circulated that the Association could not maintain its prices, had the effect of impairing the confidence of the trade in its stability. But, notwithstanding these adverse conditions, the Association has sold one fourth of the entire crop of the State, and is to-day practically in control of the market. The prices paid by the outside packers for prunes ought to be an object lesson to the grower to prove to him what prices he might expect if all the prunes in the State were for sale in competition with his own. At first the price paid was 2½ cents basis price; then it was quickly dropped to 2 cents, then to 1½ cents, and sales were reported made as low as 1¼ cents. Had the management of the Association decided not to handle the crop this year, the basis price for prunes would not have exceeded 1½ cents; and I believe that the dividends being paid, of 1 cent per pound upon all sizes below 100, and ½ cent and ¼ cent on the smaller sizes, will equal what the grower would have received for his entire crop if the Association had not existed. The grower who has sold his fruit to the outside packer, and the packer who has cut prices, have done what they could to undermine and destroy the prune industry of the State. I have no doubt that there are many growers who have not joined the Association because the condition of their affairs has made it impracticable for them to do so. For them I have no word of censure; but those who have held aloof because they thought by so doing they could take advantage of their neighbors' efforts to maintain prices, are neither entitled to respect as good citizens nor as neighbors. The time has come when combination is necessary to success. The orchardist, like every man engaged in a business in which the production is increasing faster than the demand, must conform to the necessities created by those conditions. As long as the supply was less than the demand, the grower could market his fruit at a fair price, but when the supply exceeded the demand, fair prices could not be had. The same experience has been had in all the leading branches of business of the country, and combinations have been made in nearly every industry to do away with the ruinous policy of competition. This movement is not sporadic; it is no fad of the hour that will disappear when the promoters' interest in it ceases; it is based upon the settled convictions of men of the largest business experience, who recognize the fact that the old methods of distribution have become obsolete, and that centralized distributing agencies offer the best, and, at present, the only practical substitute.

For the trial of this coöperative experiment, the present year has been most unfavorable; one more so, could not have been selected from the entire period of the prune industry. It is fortunate that we have so large a percentage of the growers supporting the movement. It is their coöperation that enables the Association to practically control the market to-day. The Eastern trade has been daily expecting a reduction in the prices of the Association ever since they were cut by the outside packer. It has not understood the strength of the Association's position, and does not realize that it controls ninety per cent of the prunes of the State for two years, and that it is able to hold the crop until it can be sold at fair prices. The competition of the outside packer and grower may be vexatious, and for a time lessen the sales of the Association, but cannot compel it to reduce prices. If we do not sell the whole crop this year, we can carry the surplus over to next year. The bountiful crop of the present year is pretty sure to be succeeded by a short one, and any surplus we may carry over will then probably sell for better prices than if sold at the present rates.

For the information of those who may be interested in the matter, I will state that the management of the Association will not lower the prices they have made this year. This position is not taken from any feeling of pride in the maintenance of prices because they have been made, but because we believe that the prices named are low; that no more prunes would be sold if the prices were reduced than will be at the present rates—certainly, the consumer would not get them at any less price, and we do not believe that it would be for the interest of the grower to change prices unless, later, the demand should warrant the management in raising them.

I wish to express the obligation the management of the Association is under to the packers for the assistance rendered by them in securing membership contracts. Had it not been for their earnest and effective coöperation, the management could not have secured control of sufficient acreage to justify it in handling the present year's crop. Since the work of handling the crop has begun, the same earnest effort to make the work of the Association a success has been continued by them. Wherever differences of opinion have arisen between them and the management, either in matters arising under their contract with the Association, or relating to methods of doing the business, they have shown a willingness to comply with any regulation that might secure the protection or advance the interests of the Association. If the Association is to successfully continue its work, it will in my judgment have to be done by acting in concert with the packers.

I am aware that there are many orchardists who think that the Association can do the work of distribution better than it can be done by the packers. This opinion necessarily assumes a unity of purpose and of action on the part of the members of the Association that, while human nature is as vacillating as we know it to be, cannot be relied upon. We have seen what half a dozen packers outside the Association could accomplish this year, and if all of them were outside, and interested for self-protection in defeating its objects, they would at once create such a spirit of disaffection that, in spite of the obligations of contracts, disintegration would soon be followed by disintegration and the destruction of the organization. The packer has a large investment in his warehouses and a valuable interest in his business, which he has consumed years, perhaps, in creating, and he is not likely to permit his investment to become valueless, nor lose his business without a struggle to preserve it. But there is a stronger reason for this view than that of the protection of the packers' interest, and that is, the policy of classified labor. Any complicated business of great magnitude can be transacted to better advantage by dividing the work into its distinctive branches, and doing it with men especially trained in each branch. The merchant and the orchardist are skilled in their respective callings, and, generally speaking, each would be a failure in the place of the other. I believe, therefore, that it is both politic and necessary to the success of the Association that the grower and the packer should work together.

A question that will naturally suggest itself is, what has the Association accomplished? It has proved that the growers can be organized for the protection of their interests; that prices can be maintained by organization, and by that only; that it is possible to exploit measures for increasing the consumption of fruit that could not be tried under ordinary conditions; but the result to which I attach the most importance is familiarizing the grower with coöperative methods—proving to him by practical experience that coöperation, even upon so extensive a scale as the combination of all the fruit-growers of California, is not a dream, but a practical suggestion that can be realized whenever he chooses to put it into motion.

On motion, Judge Bond's address was received, placed on file, and a vote of thanks extended to him.

ADVANTAGES OF CO-OPERATION FROM A PACKER'S STANDPOINT.

By COL. PHILO HERSEY, of San José,

General Manager Santa Clara County Fruit Exchange.

The subject assigned to me is "Advantages of Coöperation from a Packer's Standpoint." It would have been wise to defer this discussion until your next convention. Experience, thus far, can be neither guide nor teacher. There are no facts accrued from the past season's efforts at coöperation that can be utilized as premises for logical reasoning. The balance sheets for grower or packer are not yet made. The year's business is not at an end; indeed, is not sufficiently advanced that the end may be seen or foretold. All discussion, therefore, setting forth advantages or disadvantages will of necessity be theoretical, if not prophetic.

However, this class of discussion is not new in your deliberations, and it is possible something would appear to be wrong or lacking if it did not show itself through the inspiring eloquence of a brilliant imagination, or the enthusiasm of unqualified ignorance.

The packers, feeling assured that the experiment of coöperation was not far distant, supplemented the efforts of the growers in the present undertaking; and it is not only true, but just, to say that without the assistance of all, or nearly all, of the packers throughout the State, sufficient concentration of the prune product could not have been obtained for a beginning. This assistance was given in entire good faith, with the hope and desire of a thorough trial of the efficiency of coöperation, that its advantages or disadvantages to the industry in all its relations might be made manifest.

When the Growers' Association was duly established for business, the packer was virtually out of business. His work of buying, packing, selling, and distributing had been given to the Association. The Association became the absolute owner and dictator of all rights and privileges belonging or in any way pertaining to the packing, selling, and distributing the product. The packer was in a situation simply to await the consideration of the Association. It had been intimated, however, from the earlier stages of the undertaking, and now became more apparent, that the packer's assistance along the line of his experience, both in packing and establishing trade, was a necessity. He had been stripped of his commercial relations with the grower, his judgment and experience as to what action or policy might be best in the open market set aside, and the new relation of agent with permission to purchase, pack, and sell, under conditions and limitations and at prices fixed by the Growers' Association, created.

Accepting these new relations and limitations, and with the view of relieving the Association of dealing with each individual packer, and with the higher and more important purpose of establishing good faith with each other, the packers incorporated and delegated all their business transactions, as well as all contract relations with the Association, to a board of directors, and they in turn largely to a manager. The wisdom of this action has become very apparent.

Over ninety per cent of the packers of the State united in this corporation. Each individual had some notion or plan peculiar to himself, emanating from his experience. Many meetings were required to harmonize the various ideas of the members. Prejudice, suspicion, lack of confidence, were in the beginning illy concealed. Heretofore all had been working at cross purposes, close to the extreme limit of self-interest. It was soon discovered that the motive of every plan was for the same end. Harmony then prevailed; the conditions were accepted, each packer took stock, based on his previous year's business, and all rules and arrangements agreed upon and fixed.

I think it just and proper to state here, that I attended all the packers' meetings before and at time of organization, and several of the meetings of the board of directors, and never, to my knowledge, has a word been said or thought expressed that even tended to show that any individual member of the Packers' Corporation, or of its board of directors, desired in any way or in the slightest degree to violate good faith with the Growers' Association. In truth, all of their deliberations might with perfect propriety have been had in the presence of the entire membership of the Growers' Association. It must not be forgotten, however, that the entire relations of grower and packer have been changed. The grower is acting as one individual, through one head, and the packer also.

Owing to this fact, questions for interpretation have and will continue to occur, and opinions differ. It would be unreasonable to expect it otherwise. This forbodes neither trouble nor antagonism, but assures a settlement by well-matured deliberation and rightful judgment.

Differences have arisen and been settled, and will continue to arise and be settled. Indeed, so many have already been adjusted by the exercise of good common sense, thoughtfully and wisely applied, that little remains to be done in the line of adjustment.

As a matter of advice to those having the business in hand, it will be well to urge that common sense override legal technicality and legal misinterpretation of the spirit of the agreed conditions.

To-day, both Growers' Association and Packers' Corporation are harmoniously coöperative.

It is a fact that a larger percentage of the packers are coöperating than of the growers. It would be much better if this statement could be truthfully reversed, although far better if every member of both classes were acting in entire unity.

If the statements above made are true (and they would not have been made unless known or believed to be true), there can be no question as to the packers' views of the advantages of effective coöperation. But the packer believes that to be of advantage it must be effective, and that it cannot be effective unless universal and complete in the line of its effort. The packer believes that effective coöperation, while it may not insure riches in the fruit-growing industry, will insure profit; that it will save the grower from loss, through commercial failures; that it will supply the means for enlarged markets; that it will sustain values in fruit-growing investments; that methods of handling will be improved and cheapened; that the standard of quality will be raised and greater uniformity of quality prevail; that the market will become steadier in price values and more reliable for the quantities to be consumed; that it will furnish the opportunity to withhold from the food market worthless stock, or such as will prevent the sale and reduce the value of standard stock.

If it were intended that any portion of this paper should treat of the advantages of coöperation to the packer, there must of necessity be disappointment. Very little can be said. Successful coöperation of the grower forces the packer to await the conditions of each season with stoicism. He has no power to shape the policy extended him. His only reliance is that due consideration will be given his skill and experience, which should at all times have adequate recompense.

With effective coöperation among the growers, which means as near universal as may be, the packer under present conditions and limitations, with a fair amount of skill and good business judgment, will have the advantage of doing business with the maximum assurance of profit, however small, and the minimum fear of loss and failure. This will bring to the fruit industry the utmost limit of the packer's knowledge and energy, and give renewed assurance for its greater profit and surer success.

There are, however, conditions other than those of to-day, absolutely necessary, that advantages may accrue to either grower or packer:

First—The control of a larger percentage of the product. Without this the small percentage outside spoils the market for itself as well as the much greater percentage under control.

Second—The power, courage, or policy of grappling quickly and promptly with unfavorable conditions that tend to defeat the efforts of coöperation by the Growers' Association.

Third—The mingling of men in business control who have intimate and extensive knowledge of all branches of the business in hand.

Fourth—A due consideration of the individual grower's necessities, by furnishing him with all the aid of which a powerful organization is capable.

Most fruit-growers are not capitalists, and require some immediate returns for the product that has cost them a whole year's attention.

With these conditions well established, there is no packer but will admit the advantages of coöperation, and in truth, if good crops are to prevail, its absolute necessity to save the cured fruit industry from general failure.

Colonel Hersey's paper was, on motion, adopted and ordered placed on file, and a vote of thanks extended to him.

NEEDS OF CO-OPERATION, TRANSPORTATION, ETC.

By A. H. NAFTZGER, of Los Angeles,

General Manager Southern California Fruit Exchange.

In this paper I will endeavor to make brief suggestions rather than an argument.

In determining the question whether, and how much, we need coöperation, it may be well to define the term—to know what it is.

First, let us look at it negatively. Let us see what it is not. Coöperation is not a patent device for reforming all the evils that afflict fruit-growers; it does not undertake to avenge the wrongs, real or imaginary, which individuals may have suffered at the hands of other individuals or corporations; nor is it a scheme of philanthropy by which the indolent and careless are made prosperous and contented. It is not a reversal of the laws of business, nor even a new system of commercial rules, although it may seek to introduce new practices or closer adherence to long-established rules. It cannot be independent of the every-day requirements of economy, industry, and good judgment. If the common virtues of honesty, application, and vigilance are wanting, coöperative organization is sure to fail. Coöperation is not a trust or "combine" in the modern sense of these terms. It is a matter of regret that the great organizations of California fruit-growers are sometimes referred to as "combines." We hear of the "raisin combine," the "prune combine," etc., as though they were conspiracies, offensive or defensive, or both, which they are not.

The motto of the Arlington Coöperative Association of Massachusetts could well be applied to these great fruit associations: "United to relieve, not combined to injure."

Holyoke has denominated coöperation the "Peace of industry"; and he says, "It contemplates no violence, it subverts no order, it expects no gift nor asks any favor, it keeps no terms with the idle and it will break no faith with the industrious, it touches no man's fortunes, it seeks no plunder."

Coöperation as applied to California's fruit industry seeks to end the warfare of competition, to put the growers into relationship of mutual helpfulness instead of perpetual antagonism, to arouse care and painstaking in production and preparation for market. It offers a premium on good work, it stimulates the commercial instinct by making every man in the organization feel that he has an interest in all of its operations, that he is not simply a tiller of the soil.

Coöperation delivers the individual grower from the middlemen and capitalists who would make him sell his product for the lowest price and compel the consumer to pay the highest. Without it the necessities of the individual are taken advantage of, not only against himself, but to beat down the price on his neighbor's product as well. It is unnecessary to consume time in details on this point, as every producer has felt the effect of having the necessities of his neighbor used to force down the price on his own product. At the same time that it protects the individual against destructive competition, coöperation affords the fullest opportunity for individual effort and makes certain its reward.

No member of a coöperative organization can be robbed of the fruits of his toil either by destructive competition or by the dishonest practices of speculators.

Coöperation reduces the expenses of operating, giving the grower a fair profit and the consumer supplies at reasonable prices and of honest quality. It makes it possible to open new markets by introducing the fruits where individuals would not introduce them by reason of the expense.

Coöperation is not the absorption and loss of the individual in the mass, but is rather the reaching of an understanding among the individuals by which they act together, and not each individual at war with every other one.

We are not likely immediately to reach that happy state in which selfishness shall perish from the world, but we think it has been demonstrated that upon even the selfish plane coöperation is the best policy. We have heard that the man who said "honesty is the best policy" must have tried the other, else he would have not known, and many of us who tried to go it alone have found that with perhaps no less selfishness coöperation was a great improvement.

If these things be true, we have but to glance in two directions to convince ourselves that organization is a necessity to California fruit-growers. Witness on the one hand the insecure condition of growers where concert of action is wanting. Absolutely at the mercy of conditions which they are powerless to remedy or even influence. They must depend for success upon short crops elsewhere, and upon the caprice of speculators in every direction. Supplies must be purchased at the highest price, and the product of the orchard sold in competition with everything on earth.

On the other hand, the lines or communities into which coöperative methods have been introduced speak for themselves. All the best thought of all the growers is brought under tribute for the profit of all. Methods are devised for economy in handling, for improvement in quality, for wider distribution, and for protection at all points.

The coöperative organization for which I have been asked to speak in this convention seeks to carry into actual practice the principles herein declared. We do not claim for it perfection, but that it is making progress. We have no patent upon the form of organization, nor do we insist upon adherence to ironclad rules. If the spirit of sincere coöperation be present, the rules will take care of themselves. To be sure, neither good intentions nor rules will take the place of sound business methods, but these are matters of execution.

We have endeavored to make the policy broad enough to merit the approval of every conservative man, and flexible enough to meet new conditions that may arise. Theories must always yield to practical commercial requirements.

Through more than twenty exclusive salaried agents in as many leading cities of the United States, with each of these agents pushing our business into smaller cities near him, we are made the best known agency for marketing citrus fruits in the United States. Controlling a steadily increasing percentage of the crop, we are able to exercise correspondingly greater influence over the markets and thereby to prevent to a certain extent the extreme fluctuations that have always been a great menace to the business.

Each season's experiences convince us more firmly than ever, if possible, of the wisdom of exploiting the markets for ourselves rather than to depend upon the avenues already crowded with all sorts of competitive influences.

When the demand is strong, speculative agencies will push the distribution of our fruit, but even then we should lose much of the benefit of an advancing market. Under light demand these same agencies will turn their attention to more active lines and our fruit is neglected. Our rapidly increasing product must be crowded upon the attention of the consumers, whether they ask for it or not; if need be, our fruits must be carried from door to door, even though we know the consumer prefers something else.

Only the agencies under our own control will do this. People eat particular things largely through habit; we must promote the California fruit habit.

If coöperation is necessary in preparing and offering the goods for market, it is in my judgment indispensable in the markets themselves.

I hope I may be pardoned for once more dragging into this convention my hobby about the great fruit industries of California establishing joint agencies in the markets of the world for the introduction and wider distribution of our fruits.

Firmly convinced of the feasibility, economy, and utility of the plan, I cannot promise to let it alone. What we need is marketing agencies in themselves free from adverse influences. This, as before stated, the Southern California Fruit Exchange has accomplished in more than twenty principal markets of the country.

In addition to better distribution it has been a great gain in point of economy, smaller percentages of losses, and prompt returns to growers. It was not my privilege to listen to the address of President Cooper in opening this convention, but I wish to add my humble indorsement when he says: "It is to the other side of the continent that they (the fruit-growers) must now direct their attention and unite in one general distributing plan," and, as he further says, "establish depots in several centers and employ ten or more competent agents to exploit our markets."

In the season of 1899 we controlled less than thirty per cent of the crop. Last season we controlled nearly thirty-five per cent, and of the crop now beginning to go to market we control approximately forty-five per cent. During the past four seasons our gross sales have been more than thirteen million dollars, and our average cost to operate in round figures three per cent of the gross sales, and our actual losses from bad credits less than one-fortieth of one per cent on the gross sales. When

I say operating expenses, I mean all items of every kind that are a charge against the fruit, from the time it is aboard the cars in California until the money is in the hands of the Association that packed it.

The committee has given me another and somewhat distinct subject, that of "Transportation," but this question is not irrelevant, since it is one of most vital interest to every association of producers in California.

Situated as we are, on the extreme edge of the continent, far removed from the great centers of population in which our fruits must find consumers, the freight tariffs of necessity become an important factor. There are three important elements that enter into the cost factor, so far as the priee to the consumer is concerned: First, the cost of production; second, the cost of handling; and third, the transportation charges. There is a limit in the cost of production below which the grower cannot go and keep out of the hands of the sheriff. The second element in the cost factor we seek to reduce to its lowest terms by organization. The other, that of freight charges, is fixed arbitrarily and without the consent of the producer. It is quite the fashion for producers in all lines to consider the freight tariffs, whatever they are, too high, and I believe this convention usually passes a resolution to that effect. But the freight rate bears so close a relation to our productive and commercial development that it cannot be ignored.

The fruit-growers of California cannot endure without railroads; and not without the transcontinental roads, until such time at least as we have the Nicaragua Canal. After that we shall not hear any longer that the present freight schedule is as low as it can be made and earn reasonable dividends for the stockholders of the roads.

In no other section of the republic does the freight rate bear so intimate relation to the prosperity of the community as on this coast. This is due to the fact that this freight charge constitutes so large a portion of what our goods cost the consumer. With increasing fruit crops it follows we must have more consumers, and to get more consumers we must reach a class less able to pay the price; therefore, lower prices must be made. But all this reduction must come out of the producer, except the small percentage of saving on marketing expenses secured through these coöperative organizations.

So far as citrus fruits are concerned, the freight rate is no lower than in the early days of the industry; in fact, the earning power of the rate is probably somewhat higher, as the minimum carload weight has been increased and the time made slower.

The whole transportation charge has been materially increased, because the carriers have made the refrigeration rate a fixed charge against the shipment, leaving no opportunity, as formerly, for shippers to secure a reduction on this item. It is impossible to give absolute figures, but there can be no doubt that the carriers and refrigerator companies get more out of the citrus fruits shipped from California than do the thousands of men who grow the fruit.

The discussion in this convention yesterday seemed to indicate that deciduous growers and shippers do not consider the existing freight rate excessive; at least, that they would be willing to waive that question for an expedited service. Citrus fruit-growers of Southern California believe the rate too high. For years all arguments on this point have been answered by the carriers that this traffic must be moved on rapid schedule, and that for the most part the cars must be hauled west empty. So far as rapid time is concerned, it is nearly a thing of the past, and right now, as we are beginning to fill Christmas orders for oranges, there is a car famine, because the carriers will not haul them west empty.

It is my belief that the root of all this trouble is much deeper than any explanations or excuses of the carriers would indicate, and not very difficult to find when the fruit-growers go after it with the right kind of a pick. Resolutions of conventions will not do it, but concerted action along careful, determined lines will uncover and remedy the evil.

The freight charges may have been reasonable when the traffic was small, but I believe them to be excessive now. The refrigeration tariffs I know to be exorbitant.

Not only do the growers suffer from these excessive charges, but under the existing agreement between the carriers, which I think may not unfairly be called a pooling agreement, the service is the worst in the history of the business. The time is now exasperatingly slow for perishable shipments, and the other items of service so essential to safe delivery are thoroughly bad. Overloaded cars and overloaded trains cause rough handling, broken and disordered packages, entailing great loss upon the shippers. We have simply reached in this traffic a condition which is common where competition among the carriers has been abolished by their joint agreement. In this case the situation is aggravated, because the refrigerator lines are also included in the agreement.

If you ask, what is the remedy for all of this, what can the growers do ? my answer is, do as the railroads do, *stand together*. It is idle to spend our time denouncing railroad managers as public enemies, seeking the destruction of our industry. Traffic managers are really deeply interested in us, because we produce high-class freight. Most people are monopolists, according to their opportunities; and the men who have under their control the only modes of transportation, and who exercise these functions primarily for their own benefit, are, probably, not very different from the rest of us.

But if railroad companies are arbitrary and unjust it is because they are permitted to exercise functions that do not properly belong to them. It is not correct to say that a railroad is a purely private affair. It exists by the exercise of what is popularly called the "right of eminent domain." In other words, it takes to itself the privileges and functions which belong to the public, and if the public permits it to use these privileges unjustly and oppressively, who is to blame?

To-day the unheeded plea of the fruit-growers to the railroads is for equity; we do not ask charity.

When the fruit-growers of California are unified their plea will take the form of a demand, and it will be heard and answered, because the State will then withhold from the railroads the functions they now exercise unjustly and to the great injury of our vast productive industries. We must meet combination with organization; we must help each other.

On motion, Mr. Naftzger's paper was received and placed on file.

REPORT OF NICARAGUA CANAL COMMITTEE.

The following report of the Committee on Nicaragua Canal was submitted to the convention:

To the President and Members of the State Convention of California Fruit-Growers' assembled in San Francisco, December 4, 1900:

Your Committee on Nicaragua Canal, appointed at San José in 1899, beg to report as follows:

The resolution regarding the canal, passed at San José, was duly forwarded to President McKinley and various Senators and Congressmen, and its receipt acknowledged.

The non-ratification of the Hay-Pauncefote treaty was availed of to bar any action being taken, in spite of the overwhelming congressional vote in favor of the immediate building of the canal.

Your committee, by its chairman, published an article in the New York "Arena" objecting to this country entering into any new entangling alliance regarding an interoceanic canal, because the last treaty framed to insure the construction of the canal—the Clayton-Bulwer treaty—has been, from its signature, fifty years ago, to the present time, not only an eternal bar and obstacle to even the commencement of any canal construction, but a source of international embitterment and discord.

On this account your committee recommended the denouncement and abrogation of the old treaty, and a refusal to be trammeled by any new obligations. These views were duly placed before President McKinley, and referred by him to the Secretary of State.

Your committee has received a voluminous report by the Walker Commission. The construction of the canal is declared perfectly feasible, and the cost of a thirty-foot deep canal set at the sum of $118,113,790. This includes twenty per cent for contingencies. Colonel Hains, in a minority report, places the figure at $134,818,308.

In view of the incalculable service an interoceanic canal would be to producers of farm staples all over the Pacific Coast, your committee would urge that every influence be availed of that may impel the United States Congress and Executive to work harmoniously toward the speedy undertaking and completion of this much-needed addition to our transportation facilities.

EDWARD BERWICK.
ALEX. GORDON.

On motion, the report of the committee was adopted.

Mr. Righter moved that the Committee on Nicaragua Canal be continued. Carried.

DISCUSSION ON DISTRIBUTION, TRANSPORTATION, MARKETS, ETC.

GEN. CHIPMAN. I have had some occasion for fault-finding when I got my receipts for fruit. My orchard is rented out, and I discovered that over a third of my fruit had gone in under the classification of second-class quality. But on investigation, I was satisfied that it was just, and I thought it would be a good lesson to my tenants, and would increase the quality of the products in the future. There is another point to which I desire to direct your attention, and that is the districting of the State for the purpose of handling the prune crop. There is a district around the bay, the Santa Clara district, and northern district including the San Joaquin Valley, which suffered about a quarter of a cent per pound upon the Santa Clara rating. I was informed by the Board that that was brought about by the fact that the packers found that the Santa Clara prune could command a price from ¼ to ½ cent per pound more than the prunes grown in the San Joaquin Valley and Northern California, and I believe that to be true; but I am convinced that that difference is not based upon the merits of the prune in my region when the fruit is properly cured and handled in the same manner as the Santa Clara prune. For, in such case, I am satisfied that it has all the qualities of the Santa Clara prune; in fact, it develops even more sugar in the Sacramento Valley than in the Santa Clara Valley, and I think it has quite as delicate and thin a skin—perhaps that is not true in some parts of the San Joaquin Valley, where great quantities are produced by irrigation, but what I am coming to is this: I want the Board to consider the feasibility and possibility of disposing of prunes upon their merits. I want them to investigate the fruit when it comes to the warehouse, and see if it cannot be tested as to quality without arbitrarily districting the State. That has been the cause of a great deal of dissatisfaction among the growers and members of the Association. We are perfectly satisfied to give the matter a test during these two years, but we hope those of us who grow a prune equal to the Santa Clara Valley prune will get the same price as they get.

M. THEODORE KEARNEY, owing to pressing business engagements, stated that he would be unable to serve on the Committee on Resolutions, and desired to be released. His resignation was accepted, and MR. JOHNSTON of Sacramento appointed to fill the vacancy.

Convention adjourned until 2 o'clock P. M.

AFTERNOON SESSION—SECOND DAY.

WEDNESDAY, December 5, 1900.

Convention met, as per adjournment, at 2 o'clock P. M. President COOPER in the chair.

ADDRESS BY BENJAMIN IDE WHEELER.

I appreciate that I have been made a member of a State, one of whose chief interests is fruit culture. I know what California can do, and before I came here I knew about it. In fact, it is fair to tell you now, and make open confession thereof, that I am strongly minded to go back to the East where I came from in order to get some good California fruit to eat. They told me a little while ago, when I was looking for some such oranges as we had been in the habit of calling California oranges, that they sent all of them to the East; and lo, and behold, I came here for the pure purpose of getting some better fruit; not that there was anything the matter with it there, but I had heard so much about the still better fruit here. It is not so much the growing of the fruit after all, as getting it to the mouths of the people who are to eat it; and you, in your natural aggressiveness and ability to seize the opportunity, have recognized that here in California after all, there is only about nine men to the square mile and it does not pay to cater very much to the watering mouths of California. But you must cater to the watering mouths out in the world; and that is your problem—how to find the mouths that should be gratified with the California orange. It is perfectly proper that the growers of perishable fruit should recognize that it is an ordinary business procedure to take their business out of the range of gambling and uncertainty into the range of solid, well-regulated business procedure. And I sympathize with you most fully in your attempts to put the fruit-selling business upon a solid and reliable basis. Of course, your first appeal must be to the transportation facilities, and I feel it is a perfectly legitimate work for you to undertake to claim of the transportation companies a schedule which shall be certain, or measurably certain, and regular as the passenger schedules are regular. Why not ask the railroads, and insist upon it, that they shall put our fruit trains upon a like footing with the passenger trains of the second class? What reason is there why our fruit trains should not be speeding over those long stretches of desert between the Sierras and Ogden and the rolling mountain land between Ogden and Omaha at fifty miles an hour, in order to get out of the way and keep the track clear, so that we may actually know when our fruit is to be laid down in Chicago? That is the key of the whole business. If not, you have got to go to shipping dried fruits, because the natural tendency of all men as business grows upon them is to know where they stand. Men will not permanently engage in a business that is insecure, and for the purpose of knowing where they are in case of accident they create insurance companies. Why shouldn't your business tend in the same direction? It certainly will, and must. This falling back toward dried fruit seems to me only the natural desire to have your business on a solid basis, and in order to put the business of perishable fruit on a solid basis you have got to know when your trains are to arrive at a point where they are to lay down fruit. Then I believe it will come about that your California fruit will be laid down in the East in such condition that you will never hear anything more about its being insipid and tasteless. I must confess that I have eaten in the East an abundance of California fruit that was insipid, not by any means all of it, but I have been deceived on occasions by the glowing outward appearance of it, and have bought that which was tasteless. But you and I know perfectly well that it is because you have not had a schedule you could depend upon. You started the fruit too early, in order that you might save yourselves from the necessity of having on your hands in New York carloads of rotten fruit. Now, everybody should stand with you in making this perfectly simple and righteous claim. Our interests are all bound together. The State of California is not alone a mining State, or a wheat-growing State, or a citrus fruit-growing State, or a shipping State. All these interests live together, and we are ultimately all of us interested in the success of each of the industries; and all of us ultimately supremely interested in the water question. I am very much interested in that, and I have great faith in the work that our Water and Forest Association is going to do for this State. If it is handled right there is water enough; the sole question is the distribution and the recognition of relative rights. When we can solve the water question in that great central valley of this State we open the doors for the vast population in that great central valley which shall be the densest the world supports anywhere. The San Joaquin Valley can just as well support the densest population there is in the world, as support the sparse population which is there now. It is a question of solidity, of knowing where you stand, both as to train schedules and as to the water supply. The best kind of water supply is not rain, but ditch supply. They have discovered a better way of watering land than by raining upon it, and what we want is not only water, water, water, more water, but regular water. I thank you for your attention.

Mr. Stephens moved a vote of thanks to Mr. Wheeler, which was tendered.

FOREST AND IRRIGATION.

ADDRESS BY WILLIAM E. SMYTHE, OF SAN FRANCISCO.

In the very limited time at my disposal, I can touch but briefly upon the many subjects covered by the broad work of the Water and Forest Association. In every sense of the term our forests constitute a burning issue of the time. They have been burning all over the State during the past summer season, as they do in every season. In a recent extensive tour I have often beheld a sight like that which led the children of Israel out of Egypt—"a pillar of cloud by day, a pillar of fire by night." It was the sight of our precious forests burning upon the mountain peaks. I need waste no words in describing the evils growing out of our present policy, and lack of policy. We all agree that these evils are many and that they seriously menace the economic foundation of our commonwealth. The important question is, what are we going to do about it?

We are going to assert the public authority over the control of this great natural resource. It is a matter in which the public interest ought to be paramount. There are times and places when everybody's interest is more important than anybody's interest. This is such a time and our forest areas are such a place. Everybody will be benefited by the application of a scientific forestry policy to our watersheds. When I say "everybody," I use the word advisedly. I include the lumbermen. And I want to say here that when opposition is made to the adoption of good forestry policies it proceeds from a misapprehension of what is meant. There has been opposition to every good measure of this kind which has been presented in Congress, and that opposition has been effective because the masses of our Western people have not been organized and united in favor of some specific plan. Ask the friends of scientific forestry in the East—men who lie awake nights worrying about the fate of the California forests while we merely growl about it and do nothing—and they will tell you that good measures have been defeated largely by Western votes and influence. They have been opposed in the name of the humble settler who needs the mighty forest for fence posts. But behind that humble settler stands a bigger man, who wants the public property for private profit.

Legitimate lumbering is not menaced by good forestry. On the contrary, it has much to gain from such a policy. This is plain when forestry is correctly defined. Just what does the term mean? We all know that to cut the timber ruthlessly, with no regard for reproduction, and to leave a barren wilderness, is not forestry. But some people go to the other extreme in thinking that forestry means putting a barbed wire fence about a given area and preventing the cutting of timber at all. The one idea is as erroneous as the other. Forestry means a method of cutting the timber which will perpetuate and preserve the forests—which will insure a continuous yield of merchantable lumber while permitting the forest to continue its growth and furnish lumber for future generations and, at the same time, preserve the value of the watersheds. That policy has been pursued in some parts of Europe since long before the discovery of America. That policy has been voluntarily accepted by the owners of millions of acres of private lands in the Adirondacks and Alleghanies. That policy will not injure the lumber interests of California, but will enhance the value of their properties and perpetuate the ability of those properties to meet our commercial demands. More important than all, it will prevent that grave injury to our streams and our climate which is sure to follow the continuation of present unscientific and wasteful methods in denuding our watersheds. We cannot expect to apply in California all the elaborate plans of scientific forestry which obtain in the more densely populated European communities. What we are striving for is an American policy, adapted to American conditions. For instance, much has been said about planting trees on lands which are now not profitably used. This is done to great advantage in Europe, because there labor is cheap and timber is dear. But in California it is just the reverse, labor is dear and timber is cheap. The day will come when we shall find it profitable to use the most advanced methods. Already the day has come when we must use some of these methods.

The Chief Geographer of the Geological Survey, Mr. Gannett, estimates that the last stick of timber in the United States will be cut in fifty years at the present rate of consumption. But the rate of consumption constantly accelerates with the growth of our population. We have not fifty years of grace. We have no grace at all. We must act without delay. The Water and Forest Association asks you to unite in favor of the plans put forward by Mr. Gifford Pinchot, Chief Forester of the United States. Under these plans every remaining acre of public forest would be withdrawn from entry and its administration would be vested in the Division of Forestry of the Agricultural Department. Trails would be made in the more rugged portions of the mountains, so that the timber would be accessible in case of fire. The right to cut timber would be granted on terms profitable to the Government, but this cutting would be done under stringent regulations providing for the harvesting of trees when they are ripe and favoring the steady reproduction of the forest. Most important of all, the forests would be brought under the control of a trained civilian guard, rendered immune against political influences by a fixed tenure of office.

What is to be done about the large tracts of timber which have passed into private hands? Very likely these are beyond national regulation. Is the State equally powerless to protect itself against dangers arising from the wasteful denudation of these private lands? We hope not, and we believe not. We do not permit you to burn your house to the injury of your neighbor's. We placed restrictions upon hydraulic mining when that industry wrought harm to other interests. There is not a citizen of this town who is not living every day under restrictions provided by local ordinances. We believe we can assert the police power of the State to regulate the cutting of timber upon private lands. We would have this done in a manner that would do no injustice to anybody. We are not the enemies of vested interests. We would conserve and foster them, but at the same time we would protect the general interests of the entire community.

You were saluted yesterday by our finest orator, as "the men who are creating the commonwealth of California." Surely, no one could be more deeply interested in the preservation of our watersheds, and in laws providing for the just appropriation and distribution of our streams, than those who are building California upon the foundation of her soil. I will not take time to deal with the storage question, but wish to remind you that saving the flood waters is important to other interests than those of irrigation. When we master the forces of Nature—when we harness the storm-waters that now come tearing down the channels of our streams like wild, unbridled horses—we shall maintain the more even flow of the rivers. That means the improvement of navigation. It also means the prolonging of the miner's season. Then, too, it has an important relation to manufacturing, because an abundance of cheap power, in a land which is prolific in raw materials, means the growth of countless factories. But there is an aspect of our movement which comes nearer to you as a body of practical irrigators. This is the reform of our methods touching the appropriation and distribution of water.

I do not hesitate to say that we are living under the worst water laws that ever cursed a civilized State. To a large extent we took them ready-made from the mother country. The men who brought English speech to California brought also English traditions and ideas. In an early decision of our Supreme Court, Chief Justice Murray declared that the constant effort has been to make the decisions of that tribunal conform to the analogies of the English common law and to the needs of placer mining. England is not an arid land. Irrigation differs in its essential characteristics from mining. There could be no more unfortunate sources from which to draw the laws and institutions of a land which has need of turning the water from its natural channels and spreading it over the largest possible area of soil.

Look at our method of appropriation. Let me remind you that the manner of appropriating water goes to the very foundation of a stable right. Our law says that you shall appropriate water by posting a notice in a conspicuous place at the point of proposed diversion. This might be useful if we were in the habit of diverting water on Market Street, or in other places where human beings congregate. But as a matter of fact we usually go up into the rugged hills, sometimes to the lonely bend of a willow thicket, and there post a notice where none but jackrabbits and coyotes will ever behold it. True, the law says we must also enter the notice on the county records, but that does not secure publicity. In trying to ascertain the amount of water claimed in Los Angeles County we had to wade through fifty-six great volumes, of which only five were indexed. Up to 1888 water filings were entered in the books of miscellaneous records. Then, too, we permit vested interests to grow up on the most slender foundations of language in the way of original appropriations—language that can lead to nothing else than endless litigation. Professor Marx finds that the Salinas River has been over-appropriated, on the basis of its summer flow, at least a hundred times, and Monterey County is not much of an irrigation center either. We found that in an obscure valley on the eastern slope of the Sierras where 100,000 acres might be watered by the most economical methods, but where the effort to effect the actual irrigation of less than 20,000 acres impoverishes the community by constant litigation, water has been appropriated in quantity sufficient to irrigate 228,000,000 acres, or twice as much as we expect to irrigate in all arid America. Professor Soulé reports two typical examples of appropriations in the San Joaquin River. One reads as follows: "At a point where I now stand, I hereby claim and appropriate one million inches of the San Joaquin River." There was nothing in the record to show where the gentleman stood when he helped himself in this self-sacrificing manner to the bounty of Nature. But the next one was a delightfully definite appropriation; it reads as follows: "At a point on the right bank of the San Joaquin River immediately opposite a willow tree eight inches in diameter, I hereby claim the entire flow of this stream, from its surface to the center of the earth." By stopping at the center of the earth this modest appropriator fortunately saved us from further complications with China. But the difficulty is that the willow tree may have gained a few inches in diameter, or somebody may have cut it down for fence posts, and in either case the origin of that precious right is somewhat dubious. Professor Boggs reports some interesting samples from Los Angeles. Many claimed all the water in the stream; many claimed the water where they then stood. One man identified his filing by reference to a bowlder in the bed of the creek. Now, if there are two bowlders in that creek, there will doubtless be at least two lawsuits. Another party identifies his claim by reference to a live oak tree and a sumac bush. Under our laws people claim preposterous quantities of water. One man claimed from that little innocent-looking Los Angeles River 100,000,000 cubic feet! He must have thought he was tapping the Pacific Ocean, or possibly he was gifted with prophecy and foresaw the recent rainfall of 6½ inches in twenty-four hours. One appropriator betrays a curious notion of hydraulic engineering. His claim reads: "I hereby appropriate 3,000 miner's inches under a 4-inch pressure, to be taken out in a pipe 1½ inches in diameter." The water would have to run at the rate of more than a mile a second to get there in that pipe.

What can we expect except a legacy of litigation, endless, costly, and pitiless, from a method of appropriation as lax and loose as ours? It is probably safe to say that we have spent more money in getting water into the court-house than we have spent in putting it on the land. Nearly every system of irrigation has turned out to be a system of litigation. And what do we do about the distribution of water? In this regard we have what the anarchist wants—no government. The French have a maxim to the effect that if government existed for no other purpose whatever, it would be absolutely necessary to create government in order to distribute the water supply of an arid land. But we leave this natural function of government to be fought out among the neighbors. I asked a citizen of Tulare County how he came out for water this year. He replied that he did pretty well, because he and his two sons stood all night over the headgate with their shotguns. But, he said: "Last year the neighbors got the drop on me. I lost nearly all my clothes in the fight; they tied me into a wagon and gave me a rough ride of twenty miles." I was riding down a certain stream which empties into the San Joaquin, when my companion asked me if I would like to see his arsenal. He showed me upon a certain headgate a sentry box like those at San Quentin, and told me that his expenditure for arms, guards, and ammunition during the last four months was $1600. At Riverside I was told that they had lawed each other to a standstill after thirty years of friction, and now had no more trouble about distribution, as they were upon the basis of the Golden Rule. When I visited a neighboring town I referred with pride to the virtues of my Riverside friends in this respect, but was shocked when the answer came: "Oh, yes, Riverside is on the basis of the Golden Rule, but it is not the Golden Rule they learned at their mother's knee—it is the revised version of David Harum—'Do others as they would do you, and do 'em first.' They do us first." Well, what else could they do? Our whole system rests on the basis of force. It is a case of "they may take who have the power, and they may keep who can." It is a system which would be a disgrace to Patagonia. The people cry aloud for relief.

I cannot take your time to refer to the district irrigation law, but I notice the morning papers say that we have sent the battleship "Kentucky" to Smyrna to press the collection of that $90,000 the Sultan owes us. Now, it happens that $400,000 of our district bonds are held by a bank in Constantinople, and I live in hourly dread that the autocrat of the Porte will tender payment in discredited California coupons. When he does that the President of the United States may possibly think that California financiering is more Turkish than Turkey's.

Under our present laws we have been reduced to a situation where it is almost impossible to obtain money for an irrigation work, private or public. Two years ago I walked into a London banking house and told the manager I would like to interest him in American irrigation securities. He did not kick me out, for there are times when pity arises superior to anger. But he put his hands on my shoulders, looked me in the eye, and sadly said: "My poor friend, there are no other three words in our language that would strike such terror to the heart of the British investor as those three words, American irrigation securities. If you had some irrigation bonds from Egypt, or India, or Italy, we might do business. But American irrigation securities, and particularly from California, would be like a red rag to a bull." I might have left those bonds on the pedestal of Nelson's statue in Trafalgar Square, and nobody would have touched them.

Last summer I went into a Los Angeles store to buy a modest straw hat. When I came out the proprietor asked if I had got my oil stock. I asked him what he meant. He replied, "We give certificates of oil stock with small purchases." I waited while the bookkeeper made out a certificate of oil stock in my favor. Thus I became the proud but involuntary proprietor of one five-millionth interest in a hole in the ground that is to be bored at some convenient time in the future. If that enterprising merchant had advertised that he would give irrigation securities with straw hats, do you suppose that I would have dared to go in there? Not at all; I should have feared there was something wrong with the hat.

Is it necessary to have all this trouble in order to engage in the irrigation industry? No, it is absolutely unnecessary. If time would permit I should take pleasure in describing to you the irrigation laws of Wyoming, where they have had but one single lawsuit arising out of water in the last ten years, and that one only for the purpose of testing the law, which was triumphantly upheld. They assert the paramount public authority over every drop of water in the State. They measure the streams and permit no canal to be undertaken unless the water is there to satisfy it. They distribute the water under the administration of authorities vested with police powers. They have peace and order and progress. We can easily have this in California when we adopt their sensible and statesmanlike methods.

The Water and Forest Association appeals for the support of the fruit-growers of California in this great work of reforming our irrigation laws, storing the waste waters, saving the forests, and holding up the hands of the national irrigation cause. And we know we shall not appeal to you in vain. We are fighting for the future civilization. We appeal from the California of to-day to the California of to-morrow—from the State as it is to the State as it must and shall be. To lay the foundation of millions of homes on the everlasting rock of security and justice; to command the waters to abide in their mountain home until man shall summon them down to fertilize the plain; to preserve the forests that sheltered the fathers of our commonwealth that they may bend above our children's children, and so to create the conditions out of which shall emerge, in time, the better and greater California—this, my fellow-citizens, is a mission for which we make no apology and in which we ask the support of all who love our State.

THE CANNING INDUSTRY.

From Orchard to Table, from a Canner's Standpoint.

By J. W. NELSON, of San Francisco.

The fruit-canner and the orchardist are each complements of the other, and it was not until the profession of the former began to be practiced with skill and intelligence that the calling of the latter could be said to have any practical existence—now it is one of our great sources of prosperity; but one must travel throughout the length and breadth of beautiful California, to have anything like an appreciative knowledge of her great wealth as a fruit-producer.

There is scarcely a spot in this glorious land of sunshine which will not grow, under proper conditions, to perfection and in abundance, some sort of fruit. A ride through her thousands of bearing orchards, containing as they do almost every variety of fruit known to commerce, makes it an agreeable and pleasant task to select a choice for the table. Furthermore, if one had time to visit every orchard in bearing, within the boundaries of the State, and ascertain the actual tonnage of the different varieties of both deciduous and citrus fruits, the figures would be such as to astonish even those most familiar with the subject. When we reflect that this tonnage runs over a billion pounds, we have but a faint conception of the number of tables necessary to accommodate it, to say nothing of the millions who gather around them to partake of this most valuable food. In almost every city and hamlet in this country, and in the United Kingdom, in the isles of the sea, in fact in every city of any prominence in the commercial world, canned or preserved fruits from California's orchards may be found on somebody's table, and can be obtained all the year around.

The growing of fruit is as much a science as is the profession of civil engineering, and the one most conversant with it will have the best success. It is because of a lack of knowledge of this science that many blunders have been made in fruit-growing all over the State. For instance, apricots and cherries have been planted in soil where peaches and pears should have been set instead, and vice versa; and this has been true of other varieties as well; but there is no excuse for such errors from this time forth, as experience and a better understanding of the subject have taught what to plant and when to plant it.

To plant an orchard that will yield good returns, one must study climatic and soil conditions. Apricots and cherries, for instance, do better in the counties around the bay than in those in the interior of the State; while peaches and pears do best along the rivers and creeks in the fertile Sacramento and San Joaquin valleys. A fund of information upon this subject can be had for the asking from Mr. Lelong, the worthy Secretary of the State Board of Horticulture.

As to how to cultivate, fertilize, irrigate, prune, spray, and thin trees properly for the best results, information must be had from those having had experience in such matters. The canner can only point out the varieties of fruits which please the trade most, and is only too glad at any time to tell what he knows in this regard, as well as to coöperate with the orchardist in all matters of mutual interest.

A matter of great importance is to raise fruit of proper size and quality. Apricots for canning should average not more than ten to the pound; while Tuscan, Golden, and Phillips clings, Muir and Lovell free peaches should be not less than 2¼ inches in diameter, and all other varieties of clings and free peaches 2½ inches. Cherries should average ¾ of an inch in diameter and upwards; plums about twelve to the pound, and Bartlett pears 2½ inches in diameter.

It is best to plant those varieties of trees with regard to different periods of ripening, so that the canner may have a longer season for packing. For instance, Tuscan clings are the first to ripen; then follow in succession Nichols, McDevitt, Sellers, Orange, Golden, and Phillips; all varieties of which extend over a period of six weeks. Apricots and peaches, when picked, should be firm but ripe—not over-ripe and soft. Pears are suitable when the seed in the fruit is about to turn to a dark color.

Some of the best varieties to set out for canning purposes are: Blenheim, Royal, and Moorpark apricots; Muir, Lovell, Crawford, and Mary's Choice free peaches; Tuscan, Nichols, Sellers, McDevitt, Orange, Lemon, Levi, Golden, Phillips, and White Heath cling peaches; Royal Ann, Centennial, Rockport, Burr Seedling, and Black Tartarian cherries; Bartlett pears; Yellow, Egg, Golden Drop, and Green Gage plums.

Of the wonderful productiveness of many orchards when all of the conditions are favorable, numerous instances can be mentioned. A case in point will suffice. An orchard of four acres of Orange Cling peaches, grown near Fresno, yielded last season 104 tons, all of which was good canning quality.

The interest of the grower and canner is reciprocal; the latter is a large patron of the former, buying from him over 140,000,000 pounds of fruit annually; and to be successful they must at all times work hand in hand together. Oftentimes differences arise between them in regard to deliveries of fruit which do not come up to the requirements of the contract, either in size, quality, or proper condition, and as a consequence the canner makes a vigorous kick, and is compelled to make rejections.

It is a fact that some growers have made a tender of fruit for canning that should have been left at the orchard and fed to stock. Nor is sufficient care taken in picking fruit. Some actually throw peaches and other fruit into the box as though they were so many potatoes, when they should handle them as carefully as eggs, to avoid bruising. When fruit is bruised, decay sets in and renders it unfit for canning. Then again, fruit is often shipped in large boxes containing too much weight. Think of shipping 2½-inch cling peaches in Fresno sweat boxes requiring the strength of two men to handle, and an idea can be formed as to the condition of the fruit on arrival at the cannery. Several cars were so shipped this year. No fruit, especially peaches, should be shipped in boxes containing more than thirty-five pounds. Another objection is the picking of fruit too green, instead of in a ripened state. It is no exaggeration to say that fruit has been received that would answer for a baseball or for a bullet with which to slay Filipinos. There is no place on the table for such stuff.

Last season some growers shipped apricots to be canned which were so black and cracked that they had the appearance of having been tossed up and down some smoky chimney many times before leaving the orchard. Such carelessness causes unnecessary trouble and loss to the grower and canner, and deprives the table of its proper supply.

If our tables are to be properly supplied, then fruit must be clean, of proper size, free from insects, and gathered and shipped in proper condition. Do not imagine for a moment that people are not particular as to what they get in canned fruit; they are very discriminating indeed, and any old thing will not satisfy them.

It will not do to send to market trashy fruits, expecting first-rate returns; nor is it to be supposed that the consumer will accept it without remonstrance. It were better a thousand times to keep it on the ranch, and ship only such as will be acceptable to the buyer.

In calling attention to these matters, it is best to be frank and honest, for in no other way can the wrong be rectified, and while some growers have a total disregard as to what kind of fruit they deliver, it is only fair to say that such are the exception and not the rule, for there are very many horticulturists who use the greatest circumspection in the gathering and marketing of their fruit, who are a credit to the industry, and who are making the State famous for the finest fruits on the globe.

If our California fruit-growers are alive to their interests, they will put forth their best efforts to produce an article of unexceptional quality and be willing to offer it at a price that will enable the average wage-earner to purchase it. It is the "Man With the Hoe," so to speak, whom the growers of the State must look to as a steady consumer of their fruits, when sold at a moderate price; every dinner pail or table may be expected to contain some variety of fruit every day in the year.

The institution with which I have the honor to be connected is a patron of the growers for one hundred or more million pounds of fruit, which is put up at its twenty-eight factories, and employs something like 9,500 men, women, and girls daily to handle the same; to these are paid during the canning season over $750,000 in wages. Its output of fruits and vegetables annually exceed 60,000,000 cans; a no small factor in supporting the fruit industry of the State.

The aim of the reputable packer is to can fruits that are clean and wholesome, that will please the masses, rich and poor alike—and to hold the trade which it has, and to increase it. This our institution is doing successfully, and will continue so to do if it shall receive the hearty coöperation of the growers in matters here referred to.

The best market for California preserved fruits is the United States. Because of its great wealth and the earning capacity of the masses, more fruit is consumed by it than by any other nation; although the United Kingdom is a large buyer. Fruit is recognized as it never has been before as a dietary necessity, and with a proper regard for quality and the natural increase in the world's population, the tables for California's preserved fruits are capable of almost indefinite expansion.

During the next ten years the market for these fruits will be increased to the extent of 15,000,000 people.

The pacification of the Philippines, the opening up of China, and the settlement of Asiatic Russia will open up an unlimited market for it, the extent of which will be mainly determined by the care exercised by the canner and grower alike. The burden lies principally with the latter. I have referred with some length to his share in the business, and wish now to emphasize the remarks. "In the future there will be no market for small, unripe, over-ripe, or bruised fruit of an inferior variety, and there is no reason why there should be." Good soil, proper planting, good varieties, and careful picking and packing, will insure a profit to every grower in the State, and here I must applaud the efforts of those who have paid strict attention to these particulars; an increasing number, I am gratified to say. Good, palatable fruit will make California's reputation world wide, while fruit of an opposite character exposed for sale will simply destroy our markets entirely; or, in other words, kill the goose that lays the golden eggs.

The truth of these considerations should appeal to every fruit-grower and packer in the State, for upon a strict compliance with these suggestions the whole future of the industry depends.

LADIES' AUXILIARY HORTICULTURAL ASSOCIATION.

MRS. EMMA SHAFTER-HOWARD spoke before the convention, and announced that it was the intention of the ladies to form an association which would enable them to work along agricultural and horticultural lines in connection with the California State Fruit-Growers, and asked for the support and encouragement of that body.

HON. WILLIAM JOHNSTON offered the following resolution:

Resolved, That this convention has heard with great interest and pleasure the statement made by Mrs. Emma Shafter-Howard concerning the important work now proceeding throughout the world for the advancement of women engaged in agricultural pursuits, and that it receives our most cordial approval.

Resolved, That the custom of holding special meetings of ladies attending our conventions will, in our opinion, advance the popularity and usefulness of the conventions, and we trust that they may be successfully continued.

Adopted.

MR. ISIDOR JACOBS offered the following resolution:

Resolved, That the fruit-growers of California, in convention assembled, hereby urge upon our Representatives in Congress the importance to the State of the immediate and favorable action regarding the construction of the Nicaragua Canal;

Resolved further, That the San Francisco Chamber of Commerce, State Board of Trade, and all kindred bodies interested in the welfare of California and her industries, be asked to call immediate meetings, and forward petitions to Congress urging immediate and favorable action.

Adopted.

FUTURE TRADE POSSIBILITIES IN CANNED AND DRIED FRUITS.

BY ISIDOR JACOBS, OF SAN FRANCISCO.

This is the age of commercialism, the era of trade. With the financial question settled, politics, policies, government, administration, all seem to tend in one direction—toward commercialism and commerce. It has been aptly said that trade follows the flag; it can be better said that the flag follows trade.

If our Government's future policy is formed on these lines, how necessary it is for Californians to see what part they propose to take in this necessary and vast development of the future. In this vast opening up of new markets for commerce and trade, will California take her proper place in the front rank—as with her vast and rapidly increasing industries she should—or, by inaction, be relegated to a second place and take what she can get, or what is left in our Government's trade negotiations of the future? Heretofore trade concessions on the part of the Government have only been obtained through means of reciprocity on the "give and take" theory. It is unnecessary to say that on this theory the man with "the longest pole—or pull—takes the persimmons," and the great corporations of our country have been successful in getting their products into new markets, while we in California have suffered in a more or less degree through concessions necessary to be made, in order to benefit the Standard Oil Company, the great meat companies of Chicago and the West, and other vast corporations. In the future it is apparent that other methods of vast trade possibilities are looming up, for with this country as a great world power, with a rapidly increasing navy and new territory, negotiations will be conducted on different lines, and trade concessions can and will be conducted by means other than simple reciprocity of the past. We will have much to give without injury to ourselves, and should therefore have much to receive. Will California receive the benefit of this, and its just share? As to the development to the west of us, it is apparent that we will, as being on the border line of the country we cannot help reaping vast benefit by the rapid opening up to us of the trade of the Orient, and its hundreds of millions of population, many of whom will in time become consumers of our products. But this trade to a large extent belongs naturally to us, on account of our geographical position. But will we reap the benefit of European trade that should come to us as the result of negotiations which are bound to be undertaken in the settlement of the many complicated questions which are to be adjusted sooner or later between our Government and the powers of the world?

To-day, England and our country have in view the same objects—future trade possibilities. To-day, our products are shut out of many countries by excessive tariffs, thereby curtailing our trade in foreign countries on many lines and, whether we believe in protection or free trade, the fact remains and must be faced sooner or later that as negotiations *are* taking place in relation to these matters, we would be blind to our own interests if we did not face the issue so as to reap our just share of the benefits, both in the way of better facilities to increase our trade in foreign countries and at the same time protect our producers wherever necessary.

Trade—Let us look at the rapid development of our trade in canned fruits with England. We shipped to England in

	Cases.
1893	95,817
1894	140,731
1895	281,858
1896	323,128
1897	335,896
1898	533,774
1899	659,303

Or an increase of over 600 per cent in seven years. In 1895 an appropriation of $6,000 was made by the State Legislature for an exhibit of California horticultural products at Hamburg. Mr. Filcher, of the State Board of Trade, went to Hamburg to take charge of the exhibit. At that time California dried and canned fruits were hardly known in Germany, but now the trade in California dried fruits amounts to over a million dollars per year, and it is difficult to supply the demand. Consul-General Frank Mason, in a recent report from Berlin to the State Department, says: "The prospect for an unprecedented export of American dried prunes, apricots, peaches, and pears this autumn and winter are exceedingly bright." And he further adds: "The popularity of American dried and preserved fruits in this country has increased from year to year by reason of both their relative cheapness and their unrivaled flavor and excellence, until a leading wholesale dealer in such products at Berlin informs this consulate that his applications from his customers, who are mainly grocers and provision dealers in other towns and cities, are larger this season than ever before, and relate almost exclusively to American fruits." This practically came through an initial expenditure of $6,000, and only five years ago.

The trade in canned fruits in Germany, however, has been retarded by the excessive tariffs imposed against that line of goods—this tariff being higher than the value of the goods themselves. The Paris Exposition has resulted in extensive inquiries for our canned and dried fruits, and there can be no doubt that a most marvelous development in the trade of California dried fruits will be noticeable in the near future with all European countries through the exhibits at the Paris Exposition. We cannot, however, expect the same of canned fruits, on account of the excessive tariffs against them.

The markets of the world have barely been touched by us in our efforts to introduce California canned and dried fruits, and who is there that can prophesy what the business will amount to in the near future, when it is understood that we have only just begun to recognize the importance, to us, of developing new trade for our products? Aside from all the countries of Europe, who are waiting for an opportunity to become educated up to using our products, we have to the west of us hundreds of millions of people, many of whom can be educated to the advantage of using our output. We stand at the gateway of this enormous trade, and this gigantic aggregation of population, who are waiting and yearning to have developed in them a taste for our fruits in their various stages of preservation. If only a small portion of these hundreds of millions begin using our products, who can foretell the future of this trade? Not only the immense Orient is open before us, not only the islands of the Pacific, not only the vast colonies of Australia and New Zealand, but we see looming up before us vast possibilities of trade in the Pacific Siberian countries. Vladivostok, the terminus of the great Siberian Railway, 16,000 miles long, is already beginning to make extensive inquiries for our fruits, and before long will be a rapidly increasing market for our products. The American Consul at Vladivostok wrote to the Department of State at Washington recently, that communications between Port Arthur and Vladivostok will not be delayed later than the spring of 1902.

Last year, when in Berlin, I was informed by Ambassador White that, in his opinion, trade in California canned and dried fruits was in its infancy; all that it required was that Californians should maintain their supremacy for quality, and only put the name "California" on such products as would do themselves and the State the greatest credit.

Now, in the United States, have we kept pace in increasing the trade of California canned and dried fruits? In dried fruits we have; but in canned fruits we have not, as the trade is not as large as it should be. It is claimed by some that this is caused by the fact that dried fruit is of greater value on account of its relative cheapness, and that the rapid development of the dried fruit trade has, to a considerable extent, detracted from the canned fruit demand. The opening up of the vast mining regions of the great Northwest certainly means a large increase in trade in those sections. In Canada, the trade in California canned fruit has fallen off in the past ten years, caused by heavy tariffs, and there are no prospects of an increase until we can get lower tariff rates. The same can be said of Mexico, the Central American republics, and South America.

The work to be done to increase our trade requires deep forethought and unity of action. We have too many commercial bodies, each doing work in its respective field. They should unite on one common policy for the good of all. To succeed in getting new trade we must lead in securing it. Our resources must be made known by the practical knowledge of them to be furnished in the places where it will do the most good, so that it may be said of California, "By her fruits ye shall know her."

"California."—It is said that imitation is the sincerest flattery. This is so, as far as it goes, but California has had much to contend with by the use of the name "California" being placed on products and manufactures which never saw this State. Fortunately, the United States courts are doing everything they can to put a stop to these frauds, but the utmost vigilance must be exercised to prevent a repetition of them, and the consequent injury to the sale of our products. With over seventy-five millions of population in this country, California to-day stands isolated with only one and one half millions of population, but producing in many lines sufficient for one hundred millions of consumers. Fortunately, we are splendidly situated geographically, for a vast unexplored trade is reached by the ocean at our door. The trade with Asiatic countries has only just begun to develop, and the most sanguine of our people cannot begin to realize the vast possibilities that loom up in the not far distant future for our fruit-growers, provided certain conditions change.

Transportation.—This is a most important part of "Future Trade Possibilities." In this part the railroads are all-important. When we take into consideration the vast distances our products must travel to reach the consumers, we can realize the important bearing that railroads must have on the development of our industries. We, in California, have before us the mighty Pacific, and let us hope the time will be in the not far distant future when American ships will take our products out of our harbor into the far distant lands across the seas.

While the railroads centering here are naturally bound up in the prosperity of our State and their and our interests are inter-dependent, still, as long as they only combine with other roads so as to be enabled to give us better through service, better through rates, there can be no objections; but should it be shown at any time that the railroads have combined to pool their interests that they may obtain more revenue at the expense of the producer and manufacturer, then action can readily be obtained, even as the Transcontinental Association was years ago broken up.

Labor.—This is one of the most serious obstacles that menaces the rapid increase of trade in canned and dried fruits. It is not necessary for me to go into details, but every canner, every fruit-grower, knows that this is a problem, and a very serious one. Bad as it has been in the past two years, we are faced by conditions that are likely to be worse. From this point we can readily conclude that this State needs population, yet no efforts which result in any good in this direction have been undertaken in late years. We should have five millions of people in this State. They can produce sufficient to maintain themselves and, being consumers, will make work for themselves and others; but what are we doing to accomplish this end so devoutly to be wished? Are we to persist in this inaction until the problem becomes so serious as to mean heavy loss to our fruit interests? For what affects the canner or dried fruit packer, affects every fruit-grower in our State.

Methods should be adopted at once to bring more people to our State, thus relieving the situation. There are hundreds and thousands of men and women east of the Rockies who would be glad of the chance of living in this State, and who would make their living as well in California as they do in the East, besides getting the advantage of the splendid climatic conditions existing here.

EXHIBITS.—If the money spent each year in State and County fairs and exhibits was spent in permanent exhibits in foreign countries whereever there was a possibility for new trade, the results would amaze the most sanguine expectations of any one in this State. The Legislature could well afford to appropriate, say $100,000 per year for two years to test the results of such exhibits, and the employing of competent men throughout the world to give the necessary information and all particulars, such as freight rates, etc. Our press and our railroads, being mutually interested in the increase of the trade in our products, do much to advertise the State, but the articles produced would be the best advertisement; in other words, "the proof of the pudding is in the eating thereof."

THE PACIFIC COAST MUSEUM.—This is an organization formed by the business interests of the City of San Francisco toward gathering all statistics regarding trade in California products, and distributing such information to our dealers, producers, and manufacturers, also furnishing information to the various parts of the world relative to the introduction of California products into new markets. The Museum Association is founded on the lines of the Philadelphia association, which has already been remarkably successful (on the lines laid down by its founders). That association, however, has had the backing, both financial and otherwise, of the National government, as well as of the State and City governments. It remains to be seen whether the Pacific Coast Museum Association will receive the financial support of our Legislature and city government. I wish to suggest that, if so, there should be an adjunct to the Museum, a California bureau at Washington, which, in my judgment, would accomplish wonders for this State in connection with the future of our trade in California products.

CALIFORNIA BUREAU AT WASHINGTON.—This bureau, if formed, would at once place California in the front rank of States. Instead of California being belittled, she would stand forth as the only State whose products are of such vast importance and whose "Future Trade Possibilities" are so great as to require a distinctive bureau at Washington to guard her interests. For reasons already stated, and in view of the many negotiations being conducted by Administration officials in the interim between one session of Congress and another, it is necessary for the safeguarding of our interests that we be represented in the management of the bureau by the most capable men we can get.

It is said "Eternal vigilance is the price of liberty," but it can be said of the interests of this State, "Eternal vigilance is the price of our Future Trade Possibilities." A man in touch with the Administration, continually looking after California's interests, would know what was going on in reciprocity affairs, in Interstate Commerce Commission affairs, and many other complex questions which more vitally concern our State than any other State in the Union. Such a department would have all important statistics at hand concerning the interests of California. Such a department would place California of the first importance in the eyes of the entire country, and you may rest assured our bureau at Washington would be consulted, and the people of California would be continually posted as to what was being undertaken in the way of future trade development, freight matters, and other questions which may be considered. It would do away with our entire State press, people, producers, and others being compelled to utter protests against matters vitally affecting our interests *after* much of the evil had been done. It would do away with the necessity of various parts of our State being compelled to send delegations, committees, or attorneys on to Washington to prevent action being taken that might injuriously affect our producers. In the end accomplished only good can result from a California bureau at Washington, with a competent man at the head of it, and the Legislature can well afford to appropriate the funds to carry on said bureau as an adjunct to the Pacific Coast Museum Association.

Combination.—Export trade can be handled by combination more effectually than by the individual. A combination can produce and deliver its products more cheaply. It can better afford to explore, advertise, and create a demand for what it produces. Its advantages in developing the export trade are its strongest features. It can afford to send representatives to foreign countries and to utilize to the fullest extent all means that may result in increased trade, as concentration in the method adopted for the development of trade is the best and quickest medium of success. In fact, concentration means economy, and economy results in the greatest and quickest good at the least possible cost. Therefore, honest, legitimate combination that does interfere with trade or curtails the output of product, is a step in the right direction toward securing and developing new trade for our products.

CONSIGNMENT.—One of the most serious evils of the past, which has largely tended to retard the growth of trade, has been the indiscriminate consignments made by producers. It is far better for them to be producers and not speculators, and it always proves the most profitable in the end for a producer to sell whenever he can get a decent legitimate price for his product. It is said, "a bird in hand is worth two in the bush," but in reality a bird in hand is worth a thousand in the bush. There are good years and bad years in the fruit business. Some years fruit will bring higher prices than others; much depends on conditions and circumstances existing each particular year. It is better in a bad year to sell promptly, even at cost or a little above cost, than to hold on for higher prices, and eventually be forced to consign, thus adding expense, and leaving hardly anything. It is better to swallow the medicine promptly and wait for good, healthy conditions to develop themselves.

QUALITY.—It is quality that talks every time, and it is surprising that many do not understand that quality results in the most profit in the end. From the time the fruit appears on the tree, vigilance must be exercised, labor or expense must not be spared; the fruit should be properly thinned, so as to produce the desirable size and quality. The producer that does this will find that, for either drying purposes or canning, the results will pay on the average in the prices obtained for the product, besides doing credit to our State and its trade-name, "California."

Our fruit trade is in its infancy, provided it is developed in the proper direction and the proper methods are adopted to overcome many of the difficulties which we have to contend against, a few of which I have briefly touched upon. The business must, and will be, increased, and when that time comes, we must have new orchards, new people, and new lands. It is to be hoped that the Government will find profitable use for its money at home, so that we may develop our lands and people them with our own people, who, being producers, will also be consumers, thus developing and building up our State, which is so sparsely populated at present and whose lands can support, maintain, and enrich our people. I think that I have shown that the "Future Trade Possibilities" in canned and dried fruits are very brilliant. The business is only in its infancy and has an unlimited field before it, but to accomplish all that can be done in this direction let us hope that we shall see California the home of millions of people, her country sides the treasures from which her resources are drawn, her valleys tranquil in the white and gold of the harvest, her people loving and her homes happy, her wealth diffused and her poorhouses empty, plenty in her orchards and fields, and her sons and daughters walking together in unity, peace, and contentment.

To reach this desired end, intelligent distribution is the necessity; unity of purpose, unity of action, and perseverance and persistence are the factors which will give to the world a knowledge of the superiority of California's productions, and to the producers profitable returns for their products. Let us pledge ourselves to this line of action.

DISCUSSION ON TRANSPORTATION.

MR. KEARNEY. I would like to see all we have heard in favor of coöperation crystallized into action. We have made a long stride forward in this movement, and we need to take one step more, and that is to embrace all the growers of deciduous fruits in the bond of coöperation. We have been told of the evils that afflict this State in that industry; we have been told that all fruit-growers send their fruit East and suffer in the results, and that the labor they have expended on their orchards and the time and money spent in marketing their fruit, have resulted in absolute loss. Such being the case, we should, as practical men, find a way to prevent that loss in the future and make it a profitable instead of a losing operation. I know of no way in which you can make this fruit business a profitable industry except in further organization of all producers. You must provide a market for your fruits, and you must see that transportation is carried on in a business way and at a reasonable cost. In Fresno we grow a great many grapes for wine-making. We had a fairly good crop, and the wine-makers wanted the grapes. The growers got together and passed a resolution that they would not sell their grapes for less than $20 a ton. They had been offered $17.50, but they said they must have $20. The wine-makers were not prepared to pay $20. They withdrew from the market. They said, "We are not buying grapes now." What was the result? Those same growers sold those grapes to the same men for $15 instead of $17.50. Was that a practical way of dealing with that question? Did the growers proceed on business principles? Not at all. Resolutions of that sort don't go for anything. What they should have done was to have got together and subscribed enough money to build a winery, put their property in as security, and they could have got the money; then they could go to the wine-makers and say, "We want a fair price for our grapes, and if you do not give it to us, up goes the winery." They would not have had to sell for $15 if they had taken that course. Now then, we, as a convention of fruit-growers, come together every year and instruct our Committee on Transportation to appeal to the railroads and say, "You must do this, and you must do thus and so for us," and they being courteous, listen to our appeal and give us pretty phrases, and the business goes on as before. There is another way of dealing with that question, and that is for the growers to get together and put their products in the hands of one committee to be disposed of, and when that one committee has got that product completely under its control, to be shipped and dealt with as it pleases, that committee will receive due consideration. It will be listened to, and if one railroad will not make a rate that is reasonable and fix a reasonable time schedule, perhaps another one will come forward and be glad to do it to get all that trade. But if individuals go to these people, the railroad companies know that they have no cohesive power and can do nothing. It is clear to my mind, therefore, that the first and most necessary thing to be done is to organize; and I hope such action will be taken immediately. There should be appointed a committee of thorough-going, active, earnest men who will go all over this State and preach the gospel of organization to every grower in it. It requires active work and enthusiasm. But the reward ought to be sufficient to attract every man to such a work as that. I trust that that will be the course that will be taken by this convention. We have made great strides, but we should take one step more and embrace in coöperation every fruit-grower in the State. And I move that a committee be appointed for the purpose of organizing the deciduous fruit growers.

Mr. NAFTZGER. I would like to second Mr. Kearney's motion, but first I would like to have him modify it in this: that that committee not only undertake to organize the deciduous fruit growers, but also consider the feasibility of establishing some lines of comity or community interest, or coöperation between the varied fruit organizations of the State of California on the lines of governing these questions of service and transportation and all that kind of thing. By that I mean, here is the Raisin Association, the Prune Growers' Association, and the Citrus Fruit Growers' Association, and while we feel a friendly interest, we do not, in fact, coöperate to help each other as I believe we could do on important lines. And I would like to second Mr. Kearney's motion if he would include the feasibility of doing that thing.

Mr. KEARNEY. I am quite in sympathy with Mr. Naftzger's idea. The more we coöperate the better, and the stronger we will make it in every possible way.

Mr. NAFTZGER. There has been much said about distribution, and I heard one gentleman say he did not think there was much further opportunity for the introduction of our fruits in the United States. We have not in any measure reached the limit of distribution of our fruits among our own people. I could name the cities where we have sent a salaried agent to exploit the markets for our goods. He goes to a man in the trade who says he cannot handle California oranges in carloads; and our agent says, "I will help you a little. Suppose I dispose of one hundred boxes, will you take the balance?" "Yes, I think I can." Our agent then goes out and places ten, twenty, or fifty boxes, and enables that man to take a carload. In this way we have stimulated the trade. In one instance where we have done that we have sold sixteen cars of fruit in Florida the last season, and we will sell more next season. That is carrying coals to Newcastle, but it is one way of going after the business. Any man who withdraws or declines to go into these associations should go into the hands of the Sheriff, and I don't know but he will. There is no place, in my judgment, in the marketing of California fruit, for speculators of any type this side of the mountains. Judge Bond tells us they have sixty-five packers in their association. Has it occurred to you that not one of the sixty-five can have any marketing facilities that are any account or at all extensive; that their business is not large enough to justify them? The Prune-Growers' Association is large enough and strong enough and is paying money enough to the speculator to enable it to enter every market on earth and force its own goods. The speculator won't do it. Six years ago we had that proposition before us exactly. We had at one time ninety per cent of the orange-growers. We sat down and made the price, and that was fixed for two weeks. Then we came together and found the outsiders were selling their fruit below ours, so we cut under their price. Speculators are of no benefit to us; what we ought to do is to market our own goods.

MR. KEARNEY offered the following resolution, which was carried:

I move that a committee be appointed by this convention to accomplish an organization of the growers of deciduous fruits in California, and to consider the feasibility of some lines of comity or coöperation between all the different fruit organizations of California.

The convention then adjourned until Thursday, December 6th, at 9:30 o'clock A. M.

PROCEEDINGS OF THIRD DAY.

THURSDAY, December 6, 1900.

Convention met at 9:30 o'clock A. M., as per adjournment. Vice-President WICKSON in the chair.

Vice-Presidents Appointed.—The Chairman announced that President Cooper would be absent during a great part of the day on business connected with the State Board of Horticulture, and that it would be an aid to him to have several Vice-Presidents chosen. The following-named gentlemen were appointed Vice-Presidents: Judge H. G. Bond, of San José; Edward Berwick, of Monterey; A. D. Cutts, of Marysville; George Frost, of Riverside.

Committee on Exhibits.—On motion of B. M. Lelong, the following Committee on Exhibits was appointed by the Chair: W. H. Murray, Prof. George Hussmann, Prof. George W. Pierce, George Frost, and Prof. George W. Childs.

PROF. HUSSMANN offered the following, which was referred to the Committee on Resolutions:

Resolved by the Convention of Fruit-Growers of California, assembled under the auspices of the State Board of Horticulture, That we respectfully request Hon. James Wilson, the Secretary of Agriculture, and Mr. John Hyde, the Statistician of the Department, to publish a set of schedules for the use of correspondents better adapted to the wants of one of the main industries of the State than the present now in use. Very little cotton, sugar-cane, rice, or tobacco are grown on this Coast, while we grow all the fruits of the temperate zone, and our citrus fruits already occupy a prominent place in the markets of the world. We hope that this important industry will receive the consideration at your hands it so richly deserves, which so far has been almost entirely withheld.

Report of Committee on Foreign Consular Advices.—EDWARD BERWICK, of the Foreign Consular Advices Committee, reported the following:

To the President and Members of the State Convention of California Fruit-Growers assembled in San Francisco, December 4, 1900:

Your Committee on Foreign Consular Advices, appointed at Fresno, in 1898, and reappointed at San José, 1899, beg to report as follows:

That much difficulty was experienced in inducing the Department of Agriculture to take any steps toward granting the request of the Fruit-Growers of America that they be granted the free use of the consular service, in foreign fruit-growing countries, for the obtaining of information, by mail and cable, as to the state of crops, stocks in hand, and market conditions of the countries to which our consuls are accredited.

The Department first pleaded that they exercised no control over the consuls, they being paid by the Department of State. Later, after the consent of the Department of State had been obtained, it was agreed to "formulate a plan" to gain the end desired.

After much delay the plan simply consisted in a demand for $3,000, which, if appropriated by Congress, it was promised to use as economically as possible.

Your committee invoked the aid of Senator George C. Perkins to arrange that the $3,000 needed should be included in the regular annual appropriation made for the use of the Department of Agriculture.

This Department then took refuge in the old plea that they had no power "to censure or criticise" the work of the Department of State, and that if they did undertake to furnish the required information it would be of little value to the fruit-growers.

Your committee then addressed President McKinley in the matter. The only tangible result is a report that the Secretary of State is having a bill framed for the reform of the consular service.

EDWARD BERWICK.
EDWARD F. ADAMS.
EMORY E. SMITH.

The report was adopted, and upon motion of F. M. RIGHTER the committee was continued for the coming year, with instructions to consult with the Board of Directors of the Pacific Coast Museum Association in reference to the United States consular reports.

Reciprocity Tariff on Citrus Fruits.—The following resolution was presented by GEORGE FROST of Riverside:

WHEREAS, Under the Dingley Tariff Bill, the duty on citrus fruits was for the first time in the history of tariff legislation in the United States fixed at a rate that afforded any adequate protection to the American product; and

WHEREAS, There has been formulated a reciprocity treaty between the British West Indies and the United States, giving those islands a reduction of twenty per cent from the present duty, to the exclusion of all other foreign producers; and

WHEREAS, The present duty barely covers the difference in transportation charges between those islands and California, to the principal markets of this country, thereby guaranteeing to them, in the event of the ratification of the proposed treaty, a market for their entire product, to the exclusion of the same amount of home product; and

WHEREAS, The advantage of twenty per cent not only guarantees the producer of those islands the market, but enables him to fix the price of the American product, though largely in excess of his own; and

WHEREAS, We believe that the clause of said treaty relating to citrus fruits was agreed to on the part of the representative of the United States under a misapprehension of the true conditions existing, and the evil effects to result therefrom; and

WHEREAS, The existing tariff on citrus fruits was duly agreed upon after public hearing of all interests by committees of Congress, and forms part of the compact and pledge upon which the support of the citrus-growers was solicited for and given to the policy of protection; and

WHEREAS, The Republican party, which is now responsible for legislation, in its last National platform, pledged the party not to reduce, under the pretense of reciprocity, the existing tariff on any commodity produced in the United States—the exact language being as follows: "We renew our faith in the policy of protection to American labor. * * * We favor the associated policy of reciprocity so directed as to open our markets on favorable terms for what we do not ourselves produce in return for free foreign markets." Therefore, be it

Resolved, That we deprecate any attempt to tamper with the present tariff rate upon citrus fruits under pretext of reciprocal advantages of trade or for any other reason, from the fact that the present tariff affords no protection to the California grower beyond the difference in freight rates from the points of shipments to the principal markets of our country.

HON. WM. JOHNSTON moved that the discussions of the papers presented during the remainder of the session be confined to five minutes to each party discussing them, that the discussion shall be directly to the point, and that no member be allowed to arise twice upon the same subject until all who desired have had a chance to speak.

Motion carried.

CO-OPERATION AMONG RAISIN-GROWERS.

ADDRESS BY T. C. WHITE, OF FRESNO.

The principle of coöperation is well known among you, and the benefits to be derived by association of the producing classes of people are so well understood that it seems to me that anything I can say to this intelligent audience would hardly enlighten you further upon that subject, especially as the speakers who have preceded me have practically exhausted the subject, and also as we have, all of us, had more or less actual experience along these lines with a greater or less degree of success, which has been measured by the degree of unanimity which has been manifested among the members and the degree of business capacity developed by those who have had the management of our associations. There are many different kinds of associations or coöperative companies or trusts, as they are sometimes called. Some of them are corporations, or syndicates, more or less gigantic in proportions, formed with a capital stock, for speculative purposes perhaps. Some are simply coöperative companies or associations of producers formed for mutual benefit, without a capital stock. But all of them are organized practically for the same purpose and with the same general object in view, which is to limit competition in traffic of transportation companies, in the output of the product of the manufacturer, and of the production of the farmer and fruit-grower. Probably the most important of all of the organizations of this character is the Transcontinental Railroad Association, which was referred to here yesterday by Mr. Naftzger. This is an organization, or a combination, of all the transcontinental railroads of the United States. These people, by being organized and by their ingenious methods, are able to dictate absolutely the rates of transportation over all transcontinental railroads in the United States, and whatever rates they see fit to fix upon the transportation of the products of California are simply the rates we have to pay.

It will be of no use for this convention to pass a resolution, as was suggested yesterday, that the rates were too high and that they should be reduced, and all that sort of thing. Whatever the Transcontinental Association sees fit to charge for traffic is the price we will have to pay, and that is all there is to it.

Then, perhaps, the next association of importance is the Standard Oil Company. We all understand the enormous profits that this company has made from the conduct of its business. It is simply an association of all of the producers of petroleum in the United States. This association is headed by Mr. Rockefeller, who is said to be the wealthiest man in the United States.

The next organization of this kind of great importance is the iron trust. It is headed by Mr. Carnegie, who is said to be the next wealthiest man in the United States. These are enabled by their thorough and systematic methods to absolutely control and fix the price upon all steel and iron products, and whenever we farmers want to purchase anything that is made of iron we have to simply pay Mr. Carnegie's price.

Then the sugar trust, headed by Rockefeller, has the same hold on the consumers, and there are many other associations of that kind which I will not now take time to discuss.

Then, aside from these, there are simple coöperative companies or associations of farmers or producers organized for mutual benefit and protection. Associations of this kind are not in violation of the Federal statutes and are not operating in restraint of trade. I shall confine my remarks particularly to illustrating the benefits of these associations and combinations to the producing classes of people by referring more particularly to the organization known as the California Raisin-Growers' Association, as I am more familiar with that institution than any other, having been connected with it since its inception, and will be able to speak more intelligently of it than any other of a similar character.

The California Raisin-Growers' Association was first contemplated in May, 1898, and to Mr. Theodore Kearney is due the credit and distinction of being the originator, and of bringing the raisin-growers of California into an association for mutual benefit. Mr. Kearney first called into counsel five of the leading business men of Fresno, and after days and weeks of deliberation and consultation, and after having consulted with some of our leading attorneys as to the legality of the formation of an association of that kind, a plan was finally agreed upon which was in the form of a contract—the growers' contract, as we called it—whereby all of the raisin-growers of California were to go into an agreement binding themselves to deliver their crops, when picked and cured, into the hands of an association, to be handled and marketed for them without reserve. When the plan had been matured, meetings were held in all of the cities and towns and school districts in California where raisins were grown, from San Diego County on the south to Yolo County on the north, and the result was that more than seventy-five per cent of all the raisin-growers in California signed those contracts and agreed to become members of the Association. It occurred to the organizers of that Association during their deliberations that something would have to be done to save that industry, as the raisin-growers were actually selling their product below the cost of production. The average price that raisin-growers received for their product for four years prior to the organization of the Raisin-Growers' Association would not exceed 1¼ cents per pound in the sweat-box. This, as I have said before, is below the cost of production. We were also in possession of the information at that time that there was at least a thousand cars of raisins of the crop of 1895 left over that could not be sold at any price. We were told by many of the leading dealers in raisins—men who have handled raisins on a large scale; the brightest business men of the country—that the trouble was not with the price, but that we had an over-production; that we were producing more raisins in California than the market would take at any price; and whenever the time comes when you are producing more of a particular commodity than the consumer will purchase, then, on the old theory of supply and demand regulating the price, it would seem as though the raisin-grower was on the wrong track, and it became evident to the organizers of that Association that something would have to be done. We could not suggest that the vineyardists grub up their vines and throw them over the fence. But we were advised that we could remedy the evil by proper distribution. As the harvest time came on and the growers commenced harvesting their crops and delivering them to the Association, when about five hundred cars had been received by the association of packers and had been packed and prepared for the market, the board of directors proceeded to fix the price. Prices, as I have said, that had prevailed for four years prior to that time did not exceed 1½ cents per pound.

We proceeded to fix the price upon the different grades that would net the grower 3 cents per pound in the sweat-box, notwithstanding we had staring us in the face a full crop that year, and the thousand cars left over from the year before that could not be sold at any price. We established prices at 3 cents per pound, in circulars sent to the trade announcing those prices; we gave a guarantee that under no circumstances or conditions or possible contingency would that price be reduced during the entire season. When the board of directors had made that announcement, there was no difficulty whatever in selling the raisins; the trouble was we could not get raisins fast enough to supply the market, and at the close of the season we found that we had disposed of the entire crop of California and the thousand cars besides at double the price that prevailed four years ago. Would any of you undertake to argue that that association has not been beneficial and successful with the raisin-growers? Last year was somewhat unfavorable to the grower, but was favorable in some instances to the Association; we had a severe frost in the spring that diminished the crop about twenty per cent, and we had a light crop. The board of directors, in establishing the prices the second year, took into consideration that we had a light crop and that the crop of the year before had been entirely cleaned up, and conditions were favorable to a fair advance upon the price of the year before; the board fixed the price upon the different grades at a figure that would net to the grower 4½ cents per pound in the sweat-box, and we had no difficulty whatever in disposing of the entire crop at that price, notwithstanding it was the poorest crop in fifteen years. There were scarcely any layer raisins produced last year on account of the frost, nor were any four-crown raisins produced last year, but they received 4½ cents per pound, anyhow.

This year, we have barely started in; we have made a good commencement, however; we have distributed to the grower a couple of million dollars already, and we have sold 1700 or 1800 carloads of raisins. Now we are waiting until the outsider has sold out his raisins at a cent below the Association prices; after that, we will have no difficulty in disposing of the balance of our crop. And when we do, at the prices we have established, it will net the grower about 5 cents per pound in the sweat-box. The trouble has been incompetent marketing, and the more we handle this proposition under the Association plans, the less our difficulties will become. Raisins would start off high under the old system and would bring high prices for the first few carloads; buyers would secure a few raisins to stock up with early and pay a good price for them. Before they would reach their destination, the price would have diminished half a cent a pound; he would probably sell out his raisins and make another purchase; before that second lot of raisins would get from Fresno to Chicago or any of the large distributing points, the price would drop again, and so it continued to drop during the entire season, and the consequence was that the dealers said, "We cannot keep your raisins in stock, because we are constantly losing money on them"; and the result was they did not try to push our raisins to the trade; they said, "We cannot afford to handle your raisins; we are handling dried fruits of different kinds that we can make something on, and we have not got time to handle your unprofitable raisins." For illustration, take a concern like Sprague & Warner, or any of the large firms in Chicago. They would start in with a line of samples, through their drummers, in groceries, and the samples would consist of dried fruits such as prunes, pears, apricots, nectarines, and the like, but they would not have any samples of raisins; they would say, "We are not trying to push raisins, because we are not making anything on them." When those drummers would go to the retail grocers to sell a bill of goods they would say, "I have got nice apricots, plums, peaches, prunes, etc.," but he was not interested in selling raisins, because he wanted to sell something else that the house was making a profit on. The customer might say, "I want a few raisins; I have got to have a few raisins, as my customers are demanding them," and if the customer insisted in his demand the drummer would put down in his list, "Send this man a few boxes of raisins." That is the way our raisins were left over from the crop of 1897 and could not be sold at any price. Then is when our Association was organized. When Sprague & Warner and other large firms send their drummers out now they instruct them to push the raisins as well as the other fruits, because they are now making money on them; and the drummer, when he goes to the retail grocer, says, "I have got some fine samples of raisins," and he uses every argument possible to induce that grocer to buy them. We have no difficulty now in selling our crop at three times the amount we received for it in previous years. As to how this system works, or as to how the trade takes to it, I might illustrate by saying what a large wholesale dealer stated to us at our office about the close of the first year's business of our Association. That gentleman was Mr. Bates, one of the firm of Cobb, Bates & Yeer, wholesale grocers of Boston. Mr. Bates is also the President of the New England Wholesale Grocers' Association; he also told us that he was operating in different points in New England fourteen different retail grocery stores. Mr. Bates was visiting this coast, in the interest of his firm, and he came to Fresno, ostensibly for the purpose of inducing our board of directors to increase the cash discount. The first year we only allowed the trade one per cent off for cash, and Mr. Bates wished to have the discount cut to the usual discount of one and one half per cent for cash. In our conversation I asked Mr. Bates how the trade took to it, now that the prices of our raisins were so much higher than in previous years. He said, "Your price is all right, and you can add another cent to the price established now, and it will not make any difference." He said, "Set a fair price, and we will pay that price." He also said that it does not make any difference to him if he gets them for five cents or for two cents, that he would make his profit anyhow, but he did not want the price to be raising and lowering all the time. He said, "Set the price that you are satisfied with, and make us pay it, and we are perfectly satisfied to pay it, but under no circumstances allow that price to be reduced." I said to him, "Is there any danger of it affecting the amount of raisins that will be consumed?" He said, "It will make no difference. In my fourteen retail stores I am now operating in New England I sell raisins at from 12 to 15 cents per pound, and we sell raisins to-day to the consumer at the same prices we did when we got them for nothing, practically." As long as the consumer is not paying any more for the product than he did in former years there will be no danger of there being an under-consumption of raisins. It was stated that we had an over-production and an under-consumption. Well, under the old commission system we probably did. I was interested yesterday morning in listening to Mr. Bond's paper, because I could see that the people of Santa Clara Valley were going through the same mill that we went through the first year of our organization.

In conclusion, I will say that you must educate people up to a sense of duty to themselves and their families and to the communities in which they live, and then you will have solved the problem of how to organize successful coöperative companies and producers.

THE RAISIN-GROWERS' ASSOCIATION AND ITS BENEFITS FROM A GROWER'S STANDPOINT.

Address by ALEXANDER GORDON, of Fresno.

Since Mr. White has addressed you and so fully covered the ground, I hardly know what to say. At the commencement I would like to call your attention to the address of Mr. Nelson, delivered here yesterday. He began his address by referring to the first occupation of mankind as horticulturists away back in the Garden of Eden, and stated that they were poor judges of fruit. I don't know why it is that the calling of the farmer is not a school that advances him in business lines; the farmer should become more intelligent in lines off of the farm, yet leading up to it. Perchance, the environments of the farmer are not such as to make him as broad-minded as he should be. Here we meet at these conventions and hurrah and harangue about the transportation companies, and as far as my experience goes with these matters and these transportation people, I find them very pleasant and agreeable to talk to when you ask them for anything, but at the same time they never miss an opportunity to protect their own interests first. That is not so with the farmer. We have before us in the Raisin-Growers' Association, as Mr. White has very well said, a menace to our institution, and the only one I know of among the class of intelligent farmers; this menace is the man who continually stays out of the organization and is not broad-minded enough to stay with his fellow man and help to bear the burdens of the business. As Mr. White stated, the man that can invent a process for killing off that portion of the human family, or else making them broad-minded, and have them sign a contract, will have a very valuable article. If you can make those men come into the organization and have every raisin-grower in the country in it, we would all get rich and be a permanent fixture, instead of an uncertainty, as to-day, and we would get permanent values put on our real estate and city property—every man would be comfortable and happy in his home; but so long as these people stay on the outside and use all manner of argument against the Association, we will not and cannot feel that we are entirely safe. The California Raisin-Growers' Association has done a great deal. In 1879, the crop was 25,000,000 pounds. At that time the raisins were purchased for cash in the sweat-box; every pound of them was bought by the packers and paid for to the growers. They were sold, and everything was satisfactory; they brought us 5 cents a pound. In 1880 we had 38,000,000 pounds, and the results were about the same. In 1881 we had 52,000,000 pounds in California, and the same custom prevailed. In 1887 we had about 57,000,000 pounds, and the prices were not so high. The commission business commenced to have an effect by the end of that season. The crop that year sold for about 3½ cents a pound. The crop for 1893 was the largest we ever raised; we had 103,000,000 pounds. The Eastern trade had not lost confidence; that is, in our method of marketing; while the commission business began to cut some figure. We got more that year than out of the three years following. Mr. White has given you the price of the raisins before the organization, at a cent and a half a pound; that is, three years before the organization. The commission method of handling fruits means an unstable market; it means that there is no stability in prices, for every two or three days some of those commission houses cut their prices. I have never been so sick in my life as I have been from looking at their methods. I would go into the packer's office and say, "How are you getting along selling my crop?" and it would be the same old song—they would charge every other packer in the business with cutting prices; every packer would accuse the other man of the guilt, until we all got bankrupt. I will figure a crop of raisins now so you will understand it, as it has applied to Fresno County. It is 40,000 acres of vineyard; the crop is 1,500 pounds per acre. This would make 30,000 tons of raisins for Fresno County. The crop of 1895 was 1¼ cents, and this means about $750,000. In other words, it means thousands of dollars below what it cost to produce them—it meant bankruptcy to us. In 1898, the first year that the Raisin-Growers' Association was formed, the crop was 30,000 tons, at 3 cents a pound, amounting to $1,800,000; there is almost a million dollars that Fresno County growers saved by virtue of the California Raisin-Growers' Association in one year, and yet in the face of that fact, some of the growers in Fresno County will not come in and support our organization. The crop of 1899, based on 30,000 tons for Fresno County at 4½ cents per pound, amounted to $2,700,000. This cost the Association about $50,000 to get it off, but it is a saving of over two million over our crop of 1895, and yet, when it was demonstrated that the Association was such a success, there were growers who would not join. If you prune-growers who are forming that association will take my advice, you will get all the growers in. In our crop of 1899, based on the same amount for Fresno County, 30,000 tons at $100 per ton, which will be the price for years—that is the price set, and if the raisins are not sold at that price, the growers would rather take them out and burn them up than to break into the regular price they have established. I am not afraid but that the crop of 1900 will bring the price up to $100 a ton. In 1893, before the Eastern trade had abandoned the California methods, we shipped and sold 103,000,000 pounds of raisins, and there were imported to the United States 27,000,000 pounds, and that was the year of the worst financial panic this country has ever seen, and yet, during that year, our raisins brought nearly double what they did in 1896. The reason for that is that the trade had not yet forgotten or abandoned the idea that there was some stability to the California growers' method of marketing. In 1896 the entire crop went about 1¼ cents to the pound, but in that year the Eastern trade lost so much confidence in us that our crops could not be handled without some method. I hope the Santa Clara people will be as successful in their coöperation as have been the Fresno growers. We can now pay off our debts and come to town once more and look the people straight in the face without the consciousness that we are owing them money, as we did several years ago.

DISCUSSION OF PAPERS ON THE RAISIN INDUSTRY.

MR. DORE. I don't know that I have much to add to what has been already stated, but I hardly feel that these papers should pass by without further discussion. The organization of the Fresno Association should be an object-lesson to the producers of this State, and its presentation has been so clear this morning that no one in this convention should doubt for an instant the importance of the organization of producers to this State. It has been deplored by Mr. Bond, Mr. Gordon, and other speakers that there are so many still on the outside of the Association in Fresno. The great work of this convention should be to so enforce the lessons of these organizations as to make it possible to strengthen the sentiment and build up organizations throughout the entire State, in all dried fruit lines. It is so with the citrus fruits in the south—the Southern California Citrus Association. I am pleased to note the progress of that organization during the past year. I thought a year ago, or two years ago, that they were not upon the right lines in marketing their product, and that they should approach more nearly the operations adopted by the Fresno organization. The one fact stands out in all of this work and that is, the need of a solid unity of action among the producers all along the line. When you have obtained that, you can work together, market the product, and market it to your advantage. But, if this division and half-hearted support of the organizations in the communities where they exist continue, we cannot expect to reap that success which is within our grasp. I was pleased to see the effort made to have the deciduous-fruit growers organized in this State, and I listened with some great interest, hoping that Judge Bond would give us in his paper an intimation at least that the warfare would go on until the dried-fruit growers and producers as well as the prune-growers of this State were in a solid organization. We should not leave this meeting without organizing or forming plans that will be a step—a definite step—toward the organization of the peach and pear and apricot and all the dried-fruit growers as well as other kindred producers throughout the State. It is not enough that the raisins and prunes and oranges should be handled by these associations, but everything the growers produce should be handled in the same way, and they should not be handled in this half-hearted way; they should all come in and join. I don't know that I could say anything, or that anything further can be said, at this time that would urge these people to immediate action, but when we leave this meeting we must push on and on in the attempt until we do succeed. It is the only thing that will make our products profitable, and make home and farm life worth living. I should be glad to know that we would go on with this great fruit association and know that it would in time include every article produced on the farm. The prune organization should be a greater success than it is. On account of the successes that have been made in other lines in the way of organization, we should be encouraged to go on and secure a solid organization in each of the different lines. Let the growers of all kinds of fruit come into one strong organization in this State, control the entire product in this land of ours, and then let them go to Mr. Sproule and he will say something more than pleasant words to them in their demand for cheaper transportation. And I believe that the time is near at hand when the railroad companies will deem it to their advantage to give us a reasonable schedule time.

Mr. GRAHAM, of Fresno, offered the following resolution, which was referred to the Committee on Resolutions, and by them recommended for passage:

Resolution on the Labor Question.

Whereas, Through the insufficient labor supply during the fruit season last past, the growers and packers of the State suffered severe losses through not being able to pick and process their fruit in the short time at their disposal; and

Whereas, The prospect for the future is not more promising; now, be it

Resolved, That the Chair be asked to appoint a committee of five to devise ways and means for improving this condition.

Mr. KEARNEY. I would like to suggest one thought at this time. I see there is a disposition in the convention to get together and formulate some plan by which the several interests of the fruit-growers may be looked after, and that they may be brought into an organization. I can see no reason why there should not be organizations, separate and distinct, of orange-growers, prune-growers, raisin-growers, peach- and apricot-growers, and almond-growers. One man may be producing each variety I have named, and there is no reason why he cannot be made a member of each one of these associations. If you segregate these interests in this way, you draw together, in separate associations, all of the interests outlined, and the best skill in these various pursuits; they can then join together in a larger body for a unity of purpose, marketing and transportation and other matters, and I do hope that those here will see the wisdom of adopting that plan. I quite agree with Judge Bond that an effort was made last year by the Cured Fruit Association to draw in the producers of apricots and peaches, and that it did not succeed. I believe that if you throw that effort into the hands of men who are large producers of these particular fruits, you will get better results. Now, let all these different bodies get together and organize, and then we will be able to get into one great organization.

In accordance with Mr. Kearney's resolution on organization, adopted at yesterday afternoon's session, Vice-President Wickson announced the following committee of thirteen:

Committee on Organization.

M. Theo. Kearney, Fresno.
A. H. Naftzger, Los Angeles.
Judge H. G. Bond, San José.
Gen. N. P. Chipman, San Francisco.
William B. Gester, Placer.
E. A. Gammon, Sacramento.
John S. Dore, Fresno.
F. B. Merriam, Chula Vista.
Col. Philo Hersey, San José.
John Markley, Sonoma.
George W. Pierce, Yolo.
H. P. Stabler, Yuba City.
F. A. Chadbourne, Suisun.

RESOLUTIONS, REPORTS, ETC.

Resolutions Demanding Improved Transportation.—Mr. McKevic, of Vacaville, offered the following resolutions:

Whereas, The shipment of perishable fruits from the State of California to Eastern markets has not kept pace with the development and increase in all other varieties of our products, and the shipment of the same has, especially the past season, been attended with severe losses to all growers and shippers; and

Whereas, It is a fact that unless measures are devised to relieve the present situation, the greater portion of our shipping fruits will have to be worked over into drying or canning varieties, thus relieving us of one great outlet for the products of our orchards; and

Whereas, A careful examination of all conditions relating to the existing state of affairs has unanimously convinced us that an irregular and inadequate transportation service is responsible to a large degree for the conditions and causes above mentioned; therefore, be it

Resolved by the Growers and Shippers, in State convention assembled, That we demand an improved transportation service and a schedule time to all Eastern markets, from the companies transporting these products for us, as a measure for our relief, and one which will redound to their great good; and be it further

Resolved, That we request said service and time to approximate a delivery of cars to Chicago and similar points in six days and to New York and Atlantic Coast points in eight days; and be it further

Resolved, That we appoint and designate the Transportation Committee, as appointed at this meeting on December 5, 1900, as our representative in this matter; and be it further

Resolved, That said Transportation Committee be hereby directed to forthwith place themselves in communication and conference with the representatives of all transcontinental transportation companies, to the end that we may as speedily as possible be advised whether we can expect the desired relief and arrangements for the coming shipping season; and be it further

Resolved, That in the event of said Transportation Committee deeming their efforts unavailing and unsatisfactory, they request in writing the President of the State Board of Horticulture to again call the growers and shippers of the State together in convention to deliberate and decide upon a further course of action to pursue.

These resolutions were referred to the proper committee.

Report of Committee on President's Address.—The following report was submitted, and referred to the Committee on Legislation, to cull out its recommendations:

The undersigned Committee on Address of the President beg to report as follows:

In regard to coöperation, we deem it proper to congratulate him, and the State Board of Horticulture, which he represents, on the great advance made in this direction, and for which all credit is due to its labors and recommendations in the past.

The establishment of agencies in the more important centers of the East, for the purpose of introducing and pushing our fruit products, is of more than ordinary importance to our fruit interests, and we recommend that the convention take some action at its present session to carry out the same.

The work of beneficial insects is too well known to require notice here, but we fully indorse the recommendations of President Cooper looking to an appropriation to continue the work now so ably being prosecuted in the Orient, and advise that it be extended to Europe, where an efficient parasite of the dreaded codling moth is to be found.

In the matter of forest protection, it is imperative that some action be taken by this convention on the lines laid down by the President. At the present rate of forest denudation it will be but a short time before our mountains are deforested, and the water supply, upon which the life of our industry depends, materially lessened or altogether drained. We heartily indorse the President's recommendations, and urge upon the convention the sending of a memorial to Congress asking for legislation in this direction.

The President's remarks in relàtion to food adulteration are so plainly just as to require little comment. We would, however, urge the convention to action on the lines indicated by him, and secure sufficient appropriation and means to enforce the laws already on the statute books.

In view of our past experience with pests, it is well to follow President Cooper's advice with regard to the Belgian hare, and take time by the forelock by securing such legislation as will prevent the turning loose of these animals.

Action on the part of this convention looking to the removal of Cleopatra's Needle, now in Central Park, New York, to a more favorable climate for its preservation, together with like action on the part of other of our citizens, is to be highly recommended.

As a whole, we heartily indorse President Cooper's address, and recommend it to the careful consideration of this convention.

Respectfully submitted.

EDW. M. EHRHORN.
ALEX. GORDON.
JOHN SWETT.
R. ROBERTS.
R. D. STEPHENS.

Asking for a Weather Bureau Employe at San Jose.—F. M. Righter offered the following, which was referred to the Committee on Resolutions:

Resolved, That we, the fruit-growers of California, in State convention assembled, do hereby urge the United States Weather Bureau to provide a paid employé to study climatic conditions in the great Santa Clara Valley, the office to be located at San José, Cal., where the need has been so long and so urgently felt; and

Resolved further, That the Secretary of this convention is hereby instructed to forward this resolution to the proper authorities.

PROFESSOR WOODBRIDGE offered two resolutions, one relating to the "regulating of oil products," and the other in regard to "the manufacture and sale of commercial fertilizers." The resolutions were referred to the Committee on Resolutions.

Meeting of the American Pomological Society.—VICE-PRESIDENT WICKSON read the following letter from the American Pomological Society:

AMERICAN POMOLOGICAL SOCIETY, OFFICE OF THE SECRETARY,
WASHINGTON, D. C., November 30, 1900.

HON. ELLWOOD COOPER,
President California State Board of Horticulture,
Pioneer Hall, San Francisco, Cal.

MY DEAR SIR: The next biennial meeting of the American Pomological Society will be held during the autumn of 1901. While the exact time and place have not yet been decided, it will probably be held late in August or early in September at Niagara Falls or Buffalo, New York. It is expected that both these points will soon be decided by the Executive Committee and duly announced through the press.

As low transportation rates are assured by reason of the Pan-American Exposition at Buffalo, it is expected that the attendance will be large and representative of the horticulture of the country. It is desired by the officers and Executive Committee that the session shall be truly national in character and that all sections of the country shall be represented both by delegates and speakers upon the program.

It is therefore suggested that your fruit-growers in convention at San Francisco consider the matter of appointing delegates and arrange to have as large a representation from California as possible in attendance. If there are questions of special interest to the horticulturists of your State that should be discussed at the coming meeting, the Executive Committee will appreciate suggestions from your convention regarding them at an early date, and will consider them in arranging the program. Horticulturists everywhere are benefited by the closer acquaintance and union which such meetings as this make possible, and it is believed that great good will result therefrom.

It is also suggested that your members prepare to exhibit their new fruits of special merit at the meeting, as the biennial award of Wilder medals by the Society will occur at that time. In case the session shall be held at Buffalo the fruit exhibit will probably be held in connection with the horticultural display at the Exposition, thus affording an exceptional opportunity to exhibitors.

I will appreciate the favor if you will advise me at an early date of such action as your convention may take in the matter, as the program of the meeting is being made up for announcement in the near future.

Very truly,

WM. A. TAYLOR,
Secretary.

Convention adjourned until 2 o'clock P. M. December 6, 1900.

AFTERNOON SESSION—THIRD DAY.

THURSDAY, December 6, 1900.

Vice-President WICKSON in the chair.

REPORT OF COMMITTEE ON LEGISLATION.

The Committee on Legislation submitted the following report:

To the Chairman and Members of the California State Fruit-Growers' Convention:

We, your Committee on Legislation, suggest an indorsement by this convention of the National Horticultural Quarantine Bill, H. R. No. 96, now before Congress, and suggest that this convention adopt the following resolution:

Resolved, That our Senators and Representatives in Congress are hereby urged to secure the passage of the National Horticultural Quarantine Bill, H. R. No. 96.

Also, suggest the passage of the following preamble and resolution:

WHEREAS, The Secretary of Agriculture has included in his estimate for appropriations to be made by Congress for the ensuing fiscal year the sum of $10,000, to be expended under his direction for the benefit of the horticulture and agriculture of the Pacific Coast, as set forth in paragraph three of his estimates for the Division of Vegetable Physiology and Pathology; therefore, it is

Resolved by the Fruit-Growers of the State of California in convention assembled at San Francisco, December 6, 1900, That their Senators and Representatives in Congress be earnestly requested, both severally and as a delegation, to work for the passage of this measure by Congress.

Also, suggest the adoption of the following resolution:

Resolved, That we, the fruit-growers of California, in convention assembled, at Pioneer Hall, San Francisco, December 6, 1900, request that the California Legislature, at the forthcoming session, appropriate $5,000 to be expended under the direction of the State Board of Horticulture in studying, in the field, the life-history of beneficial and predaceous insects of our State.

PHYLLOXERA-RESISTANT VINES FOR CALIFORNIA.

BY FREDERIC T. BIOLETTI, OF THE UNIVERSITY OF CALIFORNIA.

To those of you who are familiar with the widespread damage caused by the phylloxera in nearly all the vine-growing countries of the world, a warning as to the necessity of protecting our vineyards against this pernicious insect is hardly necessary. In some of the vine-growing sections of this State, especially the newer sections and those which so far have escaped the scourge, however, there is an almost total lack of appreciation of the extent of the danger to which vineyards are exposed from this source. For the benefit of those, then, who are not familiar with the facts, a brief statement of the nature and history of the insect may be interesting, before discussing the only practical means of defense yet discovered.

THE INSECT.—The phylloxera of the vine is a minute insect, barely visible without a magnifying lens, which preys upon the roots and leaves of the vine. It is related to the scales and aphids, which are so destructive to many of our cultivated crops. It occurs in several forms, of which the most notable are the gall-making form on the leaves, the root form, and the winged form. These forms have been named in accord with their most characteristic functions. The gall form, which lives upon the leaves and usually does the vine little or no harm, is called the "form of multiplication," on account of its extreme fecundity, a single female laying five or six hundred eggs. As there may be as many as seven generations in a year, and all are females or egg-layers, a simple calculation will show that, if all the offspring of this single female lived, she would at the end of the year have million of million of millions of descendants, a number represented by one followed by eighteen zeros, but impossible to conceive. Luckily, most of them die of cold, starvation, and disease, but enough live to justify the name of "form of multiplication." The winged form is one of the chief agencies of the infection of new and isolated vineyards, and is appropriately called the "form of distribution." Lastly, the root form, which is the real destructive agent, to which the death of the vines is due, is called the "form of devastation."

The gall form rarely, if ever, occurs in California, and the winged form is much less abundant than in Europe. This accounts for the comparatively slow spread of the disease here. Multiplication and distribution, however, go on with uncomfortable celerity by the agency of the root form alone. A root insect lays from 100 to 300 eggs and there are several broods each year, while distribution is effectively accomplished by root insects attached to plants, plows, etc., and by the occasional swarms of winged forms which occur when the weather conditions are favorable.

It is hard to realize the amount of damage of which this small insect is capable. In France 3,000,000 acres of vines, half the total acreage, had beeen destroyed in 1884, fifteen years after its first introduction. This represented a loss, at a moderate estimate, of $500,000,000. The losses in Italy, Austria, and the other vine-growing countries of Europe have been proportionally great. It is difficult to estimate the number or value of the vines destroyed in California, but probably 50,000 acres, with a valuation of $10,000,000, would not be very wide of the mark. All this loss is confined to the counties north of the 37th parallel, and principally to Sonoma, Napa, Alameda, and Santa Clara, though probably no county where vines are grown north of that latitude is exempt. As far as we know at present, phylloxera has not been found south of Santa Cruz and Santa Clara counties in the coast region, nor south of

San Joaquin County in the central valley, nor south of El Dorado in the foothills. This is due, probably, more to imperfect scrutiny on our part than to any dereliction on the part of the insect.

Exemption Not to be Expected.—However, the great vineyard district of which Fresno is the center and the whole of Southern California seem at present exempt, but there is nothing in the history of the pest which offers any hope that this exemption is at all permanent. On the contrary, the course of its spread in Europe points to the conclusion that every vineyard in California, except those upon resistant roots, is doomed to extinction. Some small and isolated districts may remain unaffected for an indefinite time, but it would contradict all previous experience if such a large area of contiguous vineyards as that of the raisin district of the San Joaquin Valley should remain free from the disease. Much may be done toward postponing infection by careful quarantine regulations, if such can be enforced, but any sense of security based on any known climatic, soil, or cultural conditions is without any basis in fact. Vines have been killed by phylloxera in the hot, dry climate of Algeria, in the rich, deep soils of Southern France, and in the irrigated vineyards of Malaga.

With these facts in view it behooves every vine-grower to consider seriously what is known of importance regarding methods of defense against this doughty enemy, whether he desires to plant new vineyards or simply to maintain the one he has. Thousands, nay, tens of thousands, of so-called cures and preventives have been proposed and advocated, but all have been found ineffective, impractical, or of only local applicability, with one exception. This exception is the use of American vines as resistant stock.

Submersion.—In a very few localities in California where it is possible to cover the vineyards to a depth of six inches with water for at least six weeks continuously, the phylloxera may be controlled by submersion. In certain sections of France and Hungary there are soils in which vines are immune from phylloxera on account of their sandy nature. It is a mistake, however, to suppose that all sandy soils are immune. Only those which contain sixty per cent or more of quartz sand are safe from serious attack. Again, a few famous vineyards in France are kept alive in a moribund condition and at great expense by the use of carbon bi-sulfid, but the profit arises in these cases more from the advertisement that the vineyard still exists than from the actual yield of the vines. With these exceptions, then, which have little or no application in California, the use of resistant stock is our only practical means of defense.

Resistant Vines.—The phylloxera was introduced into California about twenty-five years ago, probably from Europe, upon cuttings or rooted vines. It was, however, from the United States that the insect was introduced into England and France and thence spread over Europe, for it is a native of the Mississippi Valley, where it makes its home upon the leaves and roots of the wild vines indigenous to the region. It occurs in large numbers upon the leaves, and in smaller numbers upon the roots of various wild species, among others upon the river-bank grape (*Vitis riparia*), the summer grape (*Vitis æstivalis*), and the rock grape (*Vitis rupestris*), without injuring them to any perceptible degree. It was a knowledge of this fact that led some of the early investigators to introduce American varieties of grapes derived by selection and hybridization from the native species, with the idea of replacing the destroyed vineyards with varieties that were more or less immune from attack. All efforts in this direction have so far resulted in failure, for two reasons: First, very few of the American varieties will bear sufficiently heavy crops to make their cultivation profitable in Europe; and second, they all produce a wine so different and, to European taste, so inferior to that of even the poorest varieties of European grapes, that they could not be used for the purpose for which grapes are principally grown there. A few varieties were found a little more suitable than the rest, which were planted and are still cultivated to a very limited extent. Perhaps the best of these is the Jacquez or Lenoir, well known in California. This attempt to find a "direct bearer," that is, a vine with resistant roots and profitable crop, has been almost abandoned for some years, and the efforts of practical men have been directed to finding varieties with resistant roots on which to graft the European varieties which produce the grapes and wine which the trade demands. These efforts have been to a great extent successful, but not until after an immense amount of time-consuming and costly experimentation.

DEGREES OF RESISTANCE.—The first difficulty encountered was the fact that not all the American varieties were sufficiently resistant. The northern grape, *Vitis labrusca*, for instance, though sufficiently resistant in the north where the phylloxera was unable to cope with the severe cold of winter, quickly succumbed when grown in a milder climate, and especially when weakened by being grafted with a European variety. The native wild grape of California, *Vitis californica*, was also found to be only partially resistant, and quickly gave up the ghost when submitted to the triple strain of phylloxera, grafting, and the production of heavy crops. Of the fifteen or twenty species of American wild vines which have been tested, practically all have been rejected for various reasons, except three and their various varieties. These three species are *Vitis riparia*, *Vitis rupestris*, and *Vitis berlandieri*.

The first successful resistant vineyards were established upon Riparia stock taken from the vines growing wild in Missouri and neighboring States. It was soon found that the Riparia stock obtained in this way varied very much in character. Sometimes the grafted vines grew vigorously and bore well, but too often the Riparia stock grew too slowly and was too slender to support a large, vigorous European vine. The growers then, instead of planting Riparia seed or cuttings obtained in the woods, selected their cuttings from vines grown in the vineyard which had shown exceptional vigor and large growth. In this way several constant types or varieties were established, which, while preserving all the power of resisting phylloxera possessed by the wild vines, were much better adapted to cultivation and grafting. One of the best of these selected varieties is the Riparia Gloire de Montpellier, which has been imported and distributed by the Agricultural Experiment Station at Berkeley. If you plant cuttings of this variety you are as sure of getting strong, vigorous vines as you are of getting good raisin grapes if you plant Muscat of Alexandria; while if you plant Riparia cuttings taken haphazard or of unknown parentage you will get vines differing more in size and vigor from each other than Mission from Muscat, and will find it impossible to obtain the even stand of vigorous vines necessary for the best results. Of the other two species, varieties have been selected and propagated in the same way. Of the Rupestris we have imported among others the Rupestris St. George, the Rupestris Martin, and the Rupestris Mission, which are probably the best obtainable.

ADAPTATION.—Another serious difficulty which the early experimenters encountered, and which has not been completely overcome yet, is that of finding resistant stocks suitable to all the various conditions under which the European vine had formerly succeeded. The American vines are much more limited in their range of adaptability, most of them will not grow well in soils containing a large amount of chalk such as those of the Champagne district, some require water near the surface, some do not succeed in compact, or clayey, or sandy soils, and so forth. The question of "adaptation" then, as it is called, is one of great importance, and for most soils and conditions has been satisfactorily solved. In a general way we may say that for rich, loose, well-drained soils which never become very dry, and in regions where the summers are not too hot, some variety of Riparia has been found most generally adapted, while for the dry, gravelly, compact soils and the hotter localities the varieties of Rupestris have given the most satisfactory results. The Berlandieri varieties are used in excessively chalky soils, but will probably not be needed in California. What we lack most now is a variety adapted to heavy clay soils such as our stiff black adobes.

The cause of some of these variations in adaptation is plainly seen on examining a growing plant. A Riparia vine sends out an abundance of slender roots, the majority of which take an almost horizontal direction through the soil. This habit is thoroughly adapted to the loose, rich soil of river banks, but is fatal to a vine growing on the hot, dry slopes where many of our Californian vineyards are placed. A Rupestris vine, on the contrary, sends down, almost vertically, a few large, strong roots, which penetrate deeply and branch out in the lower strata of the soil. This makes them admirably suited to our long, dry summer and sun-baked hillsides. The leaves of the Rupestris are also well adapted to withstand the scorching effects of the sun by their small size, leathery texture, and their power of closing like a book and presenting their edges to the sun and thus diminishing evaporation. This character is, of course, of little practical value, however, for the advantage it gives them is lost when they are grafted.

HOW TO CHOOSE A STOCK.—When we have solved these two vital problems of resistance and of adaptability we are by no means at the end of our trouble. It is found in practice that some stock cannot, without difficulty, be grown from cuttings, while others after grafting, though producing a fine growth of leaves and canes, fail to yield paying crops. Some, on the other hand, are difficult to graft or make imperfect unions with the scion, while others lose their vegetative vigor when grafted, and soon become unprofitable.

To recapitulate: In choosing a resistant stock we must take into consideration these four vital points:

1. Resistance to phylloxera;
2. Adaptation to soil and climate;
3. Fertility and vigor of grafted vines;
4. Affinity, or completeness and permanence of union with the scion.

Another important, though not vital, point is ease of handling or adaptation to our present methods of cultivation.

Taking all these points into consideration our experience justifies me, I think, in recommending four varieties of resistant vines for planting in California. There may be, and probably are, other varieties equally good, but as these varieties seem quite satisfactory there is no use confusing our minds and our vineyards with a multiplicity of useless names. These four varieties are, then, considering them seriatim:

1. *Rupestris St. George.* This is the variety most widely adapted to our Californian soils and climate. It is deep-rooted and a large, vigorous grower, and will withstand greater extremes of moisture and drought than perhaps any other resistant. It grows well in poor, gravelly soils, in rich valley soils, and has great power of penetration in compact subsoils. Its cuttings root easily, and the grafted vines when properly handled bear heavy crops. Its resistance, while only 16, has proved perfectly adequate wherever it has been planted. Its chief defect is its proneness to sucker, which it shares with all varieties of Rupestris, and the difficulty of grafting it when the vines are more than

one year old. Both these defects, however, can be overcome by the method of bench-grafting.

2. *Rupestris Martin.* In the very driest and hottest soils it is probable that this variety will be preferable to the St. George, but though a little more resistant to phylloxera it has the faults of all the Rupestris in a greater degree.

3. *Riparia Gloire de Montpellier.* This variety should replace the mixed and nondescript Riparias wherever Riparias of any kind may prove to do well, as in the southern parts of Sonoma and Napa. In these and other districts of ample rainfall and within the moderating influence of the sea, the Riparia is an excellent stock, but the costly experience of many who planted Riparias in the upper parts of these counties should make us very cautious about trying them in the hotter locations.

4. *Lenoir.* Next to the various varieties of Riparia, the Lenoir, or, as the French call it, the Jacquez, has been the most widely planted as a resistant. In many cases it has given perfect and lasting satisfaction, but in others its record is not so good. Its chief merits are that it is easy to graft in the vineyard and may be grafted at any age, and even an indifferent workman runs a fair chance of being able to establish a resistant vineyard by its use. It has given excellent results in deep, moist, rich soils, where it is able to replace the roots destroyed by phylloxera. In poorer or drier soils its lack of resistance soon betrays itself by diminishing vigor and bearing capacity. Without doubt it has an important place in certain soils, and is perhaps the safest resistant to plant for the unskillful, the inexperienced, or the hasty. For those who are willing to go slowly, to test and practice a little before attempting wholesale operations, I believe there are few cases in which better results can not be obtained with one of the Rupestris or Riparia varieties than with Lenoir.

METHODS OF ESTABLISHING A RESISTANT VINEYARD.

There seems to be some difference of opinion as to the best method of establishing a vineyard upon resistant roots, and in some quarters a good deal of unnecessary heat has been displayed in the discussion of a question that should be and eventually must be settled on a basis of fact and actual practice. When resistants were first tried in California they were planted out in the vineyard, either as cuttings or as roots, and cultivated in the same ways as had proved suitable for ordinary vines. At the end of three or four years, when the stock had attained a thickness of one, two, or more inches, they were grafted. This method was fairly successful with Lenoir stock when the grafting was not done so low in the ground that the scions were able to send out their own roots. With Riparia stock the results were not so good, and with Rupestris they were uniformly bad. Gradually, as the growers acquired skill and experience, it was found that better results could be obtained by grafting the resistants the first or second year after planting in the vineyard. These results were better in several ways. The stock and scion, being both young, the union between them was more complete and permanent; the stock, being small, could recover more easily and heal the wound made in grafting. The improvement due to early grafting was particularly marked with Riparia and Rupestris stock. That there was still room for improvement requires no proof to those who have seen the ragged results of many attempts at replacing vineyards, even within the last six or eight years. Some, after five or six years of vain efforts on the part of the owners, have been abandoned, while many others are a continual source of trouble and expense, with very little compensation in the form of crop. Some of the causes of this uneven stand and inferior crops in many of these resistant vineyards have already been pointed out, such as the use of stocks unadapted to the soil and climate and of mixed varieties of resistants. However, perhaps the main cause is the impossibility of insuring a full stand by any form of grafting in the vineyard. When the conditions of soil and of weather are exceptionally favorable, skill and care in grafting and cultivating will sometimes result in a stand of ninety or ninety-five per cent. When, however, these conditions are less favorable, as is much oftener the case, when the soil is stony or clayey, or the season too wet or too dry, a much lower percentage of good vines is obtained. It is not uncommon to see thirty or forty per cent of the grafts fail to grow at all, and of those which grow, many are weak, owing to imperfect unions. Some of the vines may be regrafted the following year, but this necessitates cutting off the stock several inches lower; thus placing the scion so low that it will inevitably send out roots and finally be destroyed by phylloxera.

Grafting.—It seems hardly possible to deny, in view of the present state of many resistant vineyards, that the system of vineyard grafting as practiced in California is not altogether satisfactory. We have considered the chief defects of that system—let us see in what way the system of cutting or nursery grafting, which has been advocated lately, promises to remedy these defects. Cutting-grafting, or bench-grafting, is a horticultural operation with which all nurserymen are familiar and have long practiced. It consists in taking a cutting from one plant and grafting it, not on another plant, but upon a cutting from another plant, and rooting this compound plant in a nursery. The union between the lower part or stock and the upper part or scion takes place in the nursery, so that when the plant is put out in the vineyard or orchard the perils and uncertainties of grafting are over and it has as good a chance to grow as an ordinary rooted plant of the same kind. The merits of this method of grafting as applied to establishing a vineyard on resistant roots are among others the following:

1. Both stock and scion consist of young wood, one year old, and therefore the union is more complete and permanent than it can possibly be when old vines are grafted.

2. The scion and stock being small and of equal size, there is no large wound to heal, and the cut surfaces are all protected from drying out or decay.

3. The conditions most favorable for rooting and the union of the graft can be established in a nursery much more easily than in the field. These conditions are:

(*a*) A loose, sandy, fairly rich soil. One acre of good nursery soil is sufficient to provide rooted grafts for planting out fifty acres of vineyard a year, and there are few localities or farms where a small piece of ground suitable for this purpose cannot be found, and at the worst it is almost always possible to make a small piece of land suitable by fertilization and a few loads of sand;

(*b*) Proper drainage and irrigation. While an adequate supply of moisture is necessary for old vines as well as for young, grafted vines are particularly susceptible to wide departures from the normal in these respects, and it is much easier to regulate them in a nursery of one acre than in a vineyard of fifty;

(*c*) Thorough cultivation and close attention to removing the scion roots and the material used for binding at the proper time. A graft in the vineyard requires just as much care and watchfulness in these respects as in the nursery, while the labor expended on the same number of vines is almost fifty times as great.

4. Grafts made in the vineyard are at the mercy of the weather. A heavy rainstorm soon after grafting will often destroy a large percentage. Cutting-grafts can be kept in a protected sand pile until all the heavy rains are over, and then safely planted out in the nursery.

5. When the cutting-grafts, after rooting in nursery, are planted out in the vineyard, only those with strong roots and perfect unions are taken, so that a complete and even stand is obtained the first year.

6. This stand is much more complete than can possibly be obtained by the system of vineyard grafting, even under the most favorable circumstances. In experiments conducted by the Agricultural Experiment Station 99⅔ per cent was obtained in good valley soil and 96 per cent in dry hill soil.

7. The union of every vine can be placed exactly where desired, at or just above the surface of the ground, and all danger of the rooting of the scion avoided.

CUTTING-GRAFTS.—Lastly, let us consider the objections which have been urged against cutting-grafting. The principal are:

1. That vines develop a much more vigorous root-system if the cuttings are planted directly in the vineyard, where they are to remain permanently. This is, I think, open to doubt, especially as often, owing to unfavorable soil or weather conditions, the growth during the first year is stunted. It is well known that fruit trees and vines in certain soils do much better if rooted first in a nursery before being planted out.
2. The vineyardists already understand the method of vineyard grafting and do not care to risk making experiments with new methods. This is a valid objection when coming from one of the few who has already established a vineyard successfully by that method, but from the many who have tried this method and failed wholly or partially it has little weight.
3. That cutting-grafting requires too much skilled labor. The truth is that it requires less than vineyard grafting, and any handy man can be taught all the skill necessary in a couple of days, and there is the further advantage that one trained grafter, or the proprietor himself, can supervise the work more perfectly.
4. That the method is too expensive. This can be proved only by accurately kept accounts of actual operations, and these will, I think, show that even when both methods are successful the advantage is on the side of cutting-grafting.

In the event of failure, the possibility of which it is always well to keep in view, the loss of money and labor expended on one acre of nursery will undoubtedly be less than of that required to plant and cultivate fifty acres of vineyard.

CALIFORNIA WINES IN FRANCE.

BY A. SBARBORO, OF SAN FRANCISCO.

I am pleased to be able to address you and impart to you the observations made by me in viticultural work in Europe. The French winemakers protested against our wines being put on the table class for class, age for age, before the jurors at the Paris Exposition, on the flimsy excuse that they were falsely labeled. This was a virtual confession that they did not want our wines to be judged alongside of their wines. All our wine is labeled California wine, and then the name of the particular class, such as burgundy, sherry, etc., and they call that false labeling. Why should we not call it burgundy, sherry, etc.? We make it from vines imported from France from which they make what they call burgundy, sherry, etc. Shall we call it Sonoma, Fresno? The trade would not know what sort of wine they were getting.

In regard to being able to compete with French wines, from observations made by me, I think there is no doubt everything favors California in this respect, and I have no doubt, also, that in a few years our wines will have the world for a market. I believe in coöperation, and think it is the right way to make an industry profitable to all concerned.

THE BEST METHOD OF RE-ESTABLISHING OUR VINEYARDS.

By HON. JOHN MARKLEY, of Geyserville.

In traveling through the State of California I find the phylloxera is making ravages in many places. I live on the Russian River, in Sonoma County, and I have land which I think is good wine-grape land. I have been planting a vineyard, and was desirous of planting it on resistant roots. I made some investigation as to what root I should use, and I have made some trials with a great many failures, and sometimes it is best to have a failure, because then you will know what to avoid. I went to Napa County, and from the information I received from one of the University professors, I have decided that the Rupestris St. George would come nearer suiting my soil, and last year I bought them in Napa County. I had the best success with cuttings from ten to twelve inches long. The cuttings that I took of that length, I gouged out all of the eyes excepting the two or three top eyes. Those I put out in February grew very well; those planted in March did not do so well, and those planted in April did much worse. I think the Rupestris St. George should be planted early in the season and have all the eyes gouged out except the two or three upper buds, because you will not then be bothered with suckers. I also tried some experiments in bench-grafting—some short, and some long cuttings. We had a dry spring and a great deal of north wind. It was hard to get the soil in good condition, and it was late in the season before I planted them out; but of those I put out in long green sprouts, sixty per cent did well; those that were short and covered with the sand, had white shoots on them; they did not do so well. I think bench-grafting can be made a success, but it is absolutely necessary to reduce the whole performance to a system. The resistant cuttings must be exactly the same length, and they must be straight; they should be assorted to size, and we should get the entire vine so you can get any size cutting to fit it.

By GEORGE SCHOENWALD, of St. Helena.

About three years ago I imported about 71,000 Rupestris St. George from France, and commenced grafting in April. I grafted about 15,000 of them and put them in sand, and after they were in the sand about twenty to twenty-six days I took them up and found that every graft was loose. I had tied them with lampwick and hemp twine. I was very particular to find out before I started what was the best thing to tie with. I think I was too particular. I took advice of everybody, and some gentleman whom I thought understood the business told me to tie those grafts with raffia and dip them in bluestone, as that would rot, and then would be the time when they should be cut. I said, "No, I want to handle that thing myself; I want to tie those vines with something that will not rot." I was told to take lampwick or hemp twine, and I did so. After twenty to twenty-six days I looked at them and they fell to pieces when I touched them. I afterwards tried several different methods, following the advice of different parties, until at last I concluded to stop and use common sense, and since I adopted that course I have been very successful.

BY J. G. GRUNDEL, OF ALMA.

I have grafted Rupestris on Muscat and Mission, and only one in seventy failed; on investigation I found vine dying from phylloxera. As a rule, if I do my own covering, drive stakes and take care of my own cuttings, I can be sure of ninety-eight to one hundred per cent. On the other hand, where the hired help does the work of covering, my success is from ninety to ninety-five per cent; frequently a scion is displaced by careless help, and I am not told of it.

We will now consider the question of scions, on which the success of grafting principally depends. These should be cut in December and January, when in a perfectly dormant condition. Let the canes be from two to three feet long. They should be buried in a cool cellar, in slightly damp sand or earth, but must not be wet, as an excess of moisture will cause the scions to sprout in sympathy with the vines in the field. If grafting is to be done late, it would be well to several times take up, leave exposed for twenty-four hours, and replace in the ground. In this way I have kept scions in a perfect condition for fourteen months.

In grafting, I do not split and have never done so on vines nor on trees; in splitting the stump, the bark is liable to be loosened and sap will collect in the split and sour; the pressure is too great on the scion; all this will help to reduce the percentage. Old vines very often cannot be split, being too much twisted and intergrown. On the other hand, the saw graft has these advantages: the sap has no chance to collect; there is no cavity; the scion is easily guided with the help of a mallet to where it belongs; it can be put in cross-grained wood; and further, more vines can be grafted in a day than in any other way, with less tools to carry.

To make the operation of grafting plain to you, I have brought some material with me to illustrate the process. I have here a vine on which Rupestris has been grafted in the last week of May last, for the purpose of using the last vitality of its roots to change into resistant.

My average on old vines in one day's work is from 250 to 300; on young vines, from one to three years old, 350 to 375, with two men as helpers. At one time we grafted at the rate of seventy an hour for eight hours, and all but ten with success. This was done on a hillside, which is easier on the grafter than level land. In grafting resistants on non-resistant vines, cut off as low as posssible, about midway between the nodes; cut off with your knife a thin slice where you intend to insert your scions; this is done to bring the union of bark and wood into view; then with your curved pruning saw make a cut one inch long by one half inch deep; trim out the cut with a thin-bladed knife and insert the scion, using a small mallet for the purpose. Use scions of two or more buds. On vines too small to saw use the tongue-graft method, and tie with a small portion of Manila rope, which will last just long enough until the union is formed. Vines to be grafted should be in a growing condition. After the vine is grafted cover with fine soil carefully and completely to two inches over the top of the scion. If the soil should contain two much clay, use less of it than if sandy. The complete covering will prevent injury from belated frost, cutworms, and rabbits, also sunburning of the buds.

I find the best time for grafting in the Santa Cruz Mountains to be, on the south slope, from the 15th of April to the 15th of May; on the north slope, the latter part of May; in the Santa Clara Valley, the first of April. It depends a great deal on the weather conditions. If the ground is too wet and cold the sap will sour; if the soil is dry, the sap will be absorbed by the soil. If grafted too early, the scion is liable to root before a union takes place. In case of rain after the grafting is done, the covering is liable to bake, and should be loosened up, or fresh soil put on.

If everything is favorable, weather included, the first scions will appear above ground in about ten days; some may not grow until August. When the scion has grown about one foot, it should be tied to the stake. The growth will show whether the scion has taken or not; in the first case the growth will be thick and strong; otherwise the growth will be spindling and have a wilted appearance.

MR. KEARNEY moved that the committee to organize the deciduous growers be increased to fifteen.

The motion was carried.

PRESIDENT COOPER appointed Colonel Weinstock and H. W. Meek, and substituted Chas. Barnes for the member from Solano, Mr. Chadbourne.

THE NEED OF A NATIONAL HORTICULTURAL QUARANTINE LAW.

By ALEXANDER CRAW, of San Francisco,
State Horticultural Quarantine Officer.

The need for a national horticultural quarantine law for the protection of the horticultural interests of the United States is annually becoming more apparent. Foreign insects are spreading over the Eastern States. With national restriction at the time they were introduced, they could have been stopped at the port of entry. Once established in the country, they are rapidly disseminated by nursery stock and natural spread. Insects in their native country may not cause any appreciable damage to vegetation, but when introduced into a new country without their natural checks, they increase enormously.

"The estimated annual damage to agricultural and horticultural interests of the United States from the attacks of insect pests amounts to $300,000,000, and at a low estimate at least one half of this damage is done by imported insects." The above figures are from an official source, and are certainly of sufficient importance to demand the serious attention of the National Government in providing measures to effectively exclude any further importations of this nature.

One orchard in North Carolina, containing 60,000 large bearing peach trees, was recently cut down and burned, because the trees were seriously infected with an imported scale. At a low valuation, those trees were worth $150,000. Another orchard in Maryland of 20,000 peach trees was completely destroyed in two years. In other States the loss from this pest has been very serious.

Another scale insect pest that is likely to surpass the "pernicious scale" in destructiveness has been introduced into the United States. It is a small white scale (*Diaspis amygdali*). This scale succumbs to fumigation with hydrocyanic acid gas, but is proof against the best insecticide solutions at the ordinary strengths. When this scale is found on stock for California, it means the confiscation and destruction of the trees or plants. Unfortunately, we have no authority to interfere with trees or plants for other States. We always notify Dr. L. O. Howard, of the United States Department of Agriculture, of such arrivals, and he notifies the proper State officials. In spite of these precautions this scale has secured a firm hold in some of the Eastern States. Professor Fernald, of the Agricultural College, Amherst, Mass., reports that this scale has been found in five places in his State, and in each case the infected trees were received from a nursery near Boston that imports direct from Japan.

If a national horticultural quarantine law had been in force, the trees could have been destroyed here, or thoroughly fumigated before being forwarded.

In my current report to the State Board of Horticulture, I called attention to the report of W. M. Scott, of Atlanta, Georgia, regarding the seriousness of this scale in that State. In one orchard of 25,000 peach trees near Irby, 10,000 of them were in such condition that they had to be dug up and burned. Owing to the fact that this scale does not confine its attacks to fruit trees, but is found upon a great variety of trees, shrubs, and ornamental plants, the danger of its introduction is much greater, and consequently it will be more difficult to exterminate where once introduced.

The existence of the disgusting "orange maggot" (*Trypeta ludens*) in our neighboring republic is well known. It is rapidly spreading in that country, and if not carefully guarded against may reach California, Arizona, Florida, or Louisiana, and inflict serious loss upon the orange-growers of those States and the orange-consumers in other States.

Mexico is not the only country that we have to fear, for we know of the existence of a similar pest infesting oranges in Fiji, Australia, and Cape Colony. Maggots of a related species attack peaches in those countries.

Japan and our newly acquired Hawaii have a maggot that destroys seventy-five per cent of the melon, cucumber, and summer squash crops in the latter country. To be upon friendly terms with those countries, we cannot be expected to keep open door for such pests. The order (*Diptera*) to which those "fruit flies"—the parents of the above maggots—belong contains some of the most rapid breeding insects known.

Several attempts have been made to pass a national horticultural quarantine bill, but owing to conflicting interests of importers and dealers in the Eastern and Middle States, nothing more has been accomplished than calling the attention of orchardists to the necessity for such a law. The first organized effort in this direction was at a meeting of horticulturists and entomologists held in the City of Washington, D. C., on March 5 and 6, 1897. A bill was then drafted and was introduced in the Senate by the Hon. Stephen M. White of Los Angeles. This bill was indorsed by the State fruit-growers in convention at Sacramento on November 18, 1897, but it did not meet with the approval of the Eastern nurserymen and tree importers, and another bill was drawn up by them, at a convention held at St. Louis in June, 1897.

Finally a conference was agreed to by both the Washington and St. Louis committees, and a compromise measure was drawn up. Possibly to give this bill some degree of indorsement from California, a Congressman from this State was selected to present it to the House of Representatives. The defects in the bill and its tendency to favor importers' interests against those of the grower were so apparent that I publicly attacked it through the press and at fruit-growers' meetings. Another bill was drafted at the State Fruit-Growers' Convention held at San José, December 12 to 15, 1899. In this bill all reference to interstate commerce in trees and plants was eliminated, for the reason that it was considered safer for the States to which the stock was consigned to make the examination, as they are more vitally concerned as to its condition, and the work undoubtedly would be more carefully done than it would be at the point of shipment. In order to harmonize all interests, it was considered better to modify several sections of the original Senate bill. The San José bill conferred certain discretionary powers upon the Secretary of Agriculture that were acceptable to the members of the convention.

No decisive action has yet been taken by Congress upon such a bill, so I take the liberty of presenting the same bill drawn up by a committee at San José and which was indorsed by the State fruit-growers in convention in that city. A similar bill met with the approval of fruit-growers in convention at Sacramento, Los Angeles, and Riverside. I hope that it will meet with your approval and be taken up by the fruit-growers of the State and Nation, individually and through their associations, exchanges, institutes, chambers of commerce, and boards of trade. If each does his part, Congress will understand that we are in earnest and will grant the necessary protection.

PROTECTION TO OUR FRUIT INTERESTS.

ADDRESS BY CAPTAIN M. J. DANIELS, OF RIVERSIDE.

Will this protection of our grand and growing fruit industry be continued?

That it should be is evidenced by active expansion of our planted area.

But already commercial interests have asked for certain reciprocal treaties with Jamaica, France, and other sections, that threaten danger unless the movement be met with a proper exhibition of our cause, and it must be done by all of the interests that are threatened. I can speak with more detail as to citrus fruit.

Under the fostering hand of protection the citrus industry of California has increased in a remarkable manner, there being nearly fifty millions of dollars invested in that industry alone. We are now protesting against the reduction of the cent-a-pound duty, as proposed by the commonly designated Jamaica treaty, now awaiting action by Congress. That treaty provides for a discrimination of twenty per cent in favor of the shipments of Jamaica oranges that come to our markets. Like in previous instances, the reduction was initiated by legislators not possessed of information in harmony with facts, and right here is where we, the producers, must make those facts known.

Hon. John A. Kasson, as Minister Plenipotentiary of this country, negotiated the treaty with this obnoxious, detrimental clause, believing, as he argued, that "the bulk of the Jamaica crops is in this market before Christmas, and then dwindles rapidly, falling off in January over sixty per cent until March, three quarters of their crop arriving before January 1st. It is well known that the California oranges are so superior that they command a price which is unaffected by the Jamaica product. The largest shipping month from Jamaica is December. The largest from California, as we are informed, is in March. This would indicate three months' difference in their season." Let us see if he is correct.

The following is a statement of the shipment of citrus fruit in car lots from California during the months of November to and including March of 1898–1899:

November	302
December	1,691
January	1,909
February	1,817
March	1,939

Importations:

	Boxes.
1895–96	790,000
1896–97	780,000
1897–98 (the year the tariff went into effect)	56,000

The output for the entire season just closed was 17,500 cars, or 6,500,000 boxes, as against 2,000,000 boxes in 1896, before the protective tariff.

These figures of actual shipments from California prove conclusively that Mr. Kasson was in error when he stated that "this would indicate three months' difference in their season." His information was likely from an unfriendly source. The real situation being that the whole State is bending every effort to produce Christmas oranges—and is doing it—and that the Jamaica treaty virtually, by Mr. Kasson's own statement, takes from us the December markets, with nothing for our Christmas stocking.

The present duty on citrus fruits (one cent per pound, or about 60 cents per box), together with the freight rate, places the California producer upon an equal footing with the producer in foreign countries. The freight rate from Italy is 30 cents per box, and the duty 60 cents, making a total of 90 cents, which is just equal to the freight rate from California to the Eastern market. Jamaica, lying at the very threshold of the Eastern market, enjoys a much greater advantage than either California or Italy, even under the present tariff rates, and any further reduction of the duty would work a great injustice to and hardship on California. The paralyzing effect of this attempted blow to the above industry becomes more apparent when one considers that within a few years the December shipment of citrus fruits from California, instead of being 1,691 carloads, as at present, will reach the enormous total of 5,000 carloads.

When the Dingley tariff bill was before Congress, the citrus-fruit growers of California asked for a protective duty equal to the difference in freight as between Mediterranean ports and our Atlantic seaboard cities, and California and the same markets; which, after mature consideration, was granted as being consistent with the policy of the Government to protect the American producer. Immediately the carrying trade between the Mediterranean ports and the United States reduced its freight forty per cent, thereby giving the foreign producer that much advantage; and now, in addition, we are asked to concede twenty per cent to a country which can have a freight rate of 10 cents per box as against the California rate of 90 cents per box.

Under the encouragement afforded by the protective system the producers of citrus fruits have invested large sums of money in the improvement and extension of the industry, developing water, building reservoirs and canals, planting the most select varieties of trees, employing skilled labor in handling and packing the fruit, in order to successfully compete with the foreign producer, and our resources are only limited by the demand and a market. Our surprise and disappointment lie in the fact that the hand that built up this wall of protection around this industry and thus enabled us to invest our money with some degree of certainty, should encourage the foreign producer to become more than an equal competitor. Even under the present protective system we will soon be compelled to compete with the imports from our new possessions, and therefore no encouragement should be given to the foreign producer to take from us our own market. Only by supplying the choicest of fruit can California compete with the foreign product at the present time. The total annual output to-day from California amounts to about 7,000,000 boxes of citrus fruits, and promises within the next decade to double that amount. The product represents the investment of nearly fifty millions of dollars, and the producers pay to the great railroad systems of the country for freight on their product nearly five millions of dollars annually in order to place the fruit on the Eastern market. Thus, this industry is responsible for the employment of thousands of people in handling and marketing this fruit, and at wages varying from $1.50 to $3 per day.

In order to preserve this industry which is increasing so rapidly we must have the American market for the American product—we must force our fruit into every household in the United States; yea, more, we must force it down the throats of the American people.

Convention adjourned until Friday morning, December 7th, at 9:30 o'clock.

PROCEEDINGS OF FOURTH DAY.

FRIDAY, December 7, 1900.

Convention met at 9:30 o'clock A. M., as per adjournment. Vice-President WICKSON in the chair.

VICE-PRESIDENT WICKSON. I have to congratulate the convention on the work of yesterday. We succeeded in disposing of everything except the partial report by the Committee on Resolutions, and you can take that up now.

ACTION ON RESOLUTIONS.

The following report of Committee on Resolutions was read and the resolutions adopted:

Your Committee on Resolutions, having had under consideration the following resolution, on "free market," offered by C. W. Childs, beg leave to refer same back, and recommend its passage:

Resolved, That the Legislature about to convene be requested to so amend the law for the establishment of a free public fruit market, on the State property on the San Francisco water front, that the Board of Harbor Commissioners will be unable to longer refuse to execute it.

Also: Having had under consideration the resolution relating to perishable fruit shipments, beg leave to report same back and recommend its passage.

Also: Having had under consideration the resolution offered by George Hussmann, relating to agricultural and horticultural reports, beg leave to report same back and recommend its passage.

WM. JOHNSTON,
J. T. BOGUE,
GEO. P. HALL,
JOHN SWETT,
ALFRED BARSTOW,
Committee.

The resolution introduced by Mr. George T. Frost, relating to reciprocity tariff on citrus fruits, was adopted as read, with the following amendment offered by Mr. Isidor Jacobs: "That a copy of the same be sent to the members of the Legislature at its next session." Also the following amendment offered by Hon. R. D. Stephens: "That a copy of the same be sent to the members of both houses of Congress."

The following resolution was offered by General N. P. Chipman:

WHEREAS, The California State Board of Trade has undertaken to install and conduct an exhibit of the industrial and other resources of this State at the Pan-American Exposition to be held at the City of Buffalo, in the year 1901; and

WHEREAS, It is the desire of the State Board to make such exhibit without calling upon the Legislature for financial aid;

Now, therefore, The fruit-growers of California, in annual convention assembled, hereby heartily indorse the efforts of the State Board of Trade, and we call upon all persons engaged in the fruit industry in this State to extend all possible assistance to this worthy and patriotic object.

Upon motion of R. D. Stephens, the rules were suspended and the above resolutions adopted.

The following recommendations in President Cooper's annual address, which were referred to the Committee on President's Address, and reported favorably by that committee, were unanimously indorsed by the convention:

1. Recommending a legislative appropriation of $10,000, to be placed in the hands of the State Board of Horticulture, to continue their investigation and search for predaceous and parasitic insects to destroy injurious insects that prey upon fruit trees and fruit products.
2. To adopt a plan to execute our pure food laws, by either empowering some one of the special bureaus to prosecute violators, or creating a separate bureau for this special work, with an efficient appropriation to carry on the work.
3. To prevent the spread of the Belgian hare as a pest.
4. Asking the California State Board of Trade, in conjunction with the Park Commissioners of San Francisco, to ascertain if Cleopatra's Needle, known as the New York Obelisk, is scaling off, and if so, commence negotiations for its removal to Golden Gate Park, San Francisco, at the earliest possible moment.

The resolution of Mr. Graham of Fresno, presented at Thursday morning's session, relating to the "insufficient labor supply during the fruit season last past," was adopted by the convention.

The resolution of F. M. Righter of Santa Clara County, presented at Thursday's session, regarding the services of a paid employé for the Weather Bureau, was adopted by the convention.

OUR EXPORT FRUIT TRADE AND EXPORT PACKAGES.

By B. N. ROWLEY, of San Francisco.

In response to invitation, I have prepared a brief sketch outlining some of the disadvantages under which our fruit export trade is conducted.

First, the matter of a standard package in which to export California cured fruits should be given serious consideration by this convention. A uniform standard package would not only prove a great benefit to the export trade, but would in a measure correct some of the present abuses of which foreign buyers now complain, and in a degree would improve the demand for our cured fruits in foreign countries. Every civilized country under the sun is using in some form California fruits, but for the purposes of this discussion we will deal with cured fruits only.

The varieties of cured fruits exported are prunes, apricots, pears, raisins, and peaches. Until the present season prunes have maintained the lead, the quantity going export aggregating upward of one thousand carloads in a single season. These prunes were distributed in England, Germany, France, and other portions of Europe. This season France produced an enormous crop of prunes, and, prices being correspondingly low, the quantity of prunes exported from California has been exceedingly light, only a few carloads having gone forward thus far. These conditions placed apricots in the lead, as several hundred carloads of cured apricots have gone export from the crop of 1900. But as the prune outranks all the other export varieties in point of production, and at times meets with serious competition in the markets of Europe, I will deal chiefly with that fruit.

With a large prune crop in California this season and export conditions decidedly against us, every effort should be made to improve so far as possible the foreign demand. Concessions in prices have been made by the California Cured Fruit Association with the view of meeting the French competition, but the demand continues next to nothing, notwithstanding the very low price named for export. Last season serious complaints were made by foreign buyers regarding both the quality and style of the package in which our cured fruits were packed and shipped.

Packers and shippers of cured fruits quote prices to European buyers on a C. I. F. basis, meaning that the shipper names a price covering cost, insurance, and freight—virtually a delivered price. This method of dealing between exporters and importers is quite general in all parts of the world. On this basis the foreign buyer receives his bill of lading and other documents and pays a draft covering the cost of the goods before the goods arrive. Later on comes the buyer's tale of woe regarding the loss of fruit from damaged and broken packages. Such complaints are not general, but altogether too frequent.

California prunes are exported in 25, 27½, 50, and 55-pound boxes. As the price named to foreign buyers is virtually a delivered one, the weight of the shipment cuts an important figure. The fruit is naturally expected to hold out in weight, but the weight of the package can be materially reduced by using light, thin material. In short, a package that will hold together until loaded on board the cars and a receipt furnished by the railroad company showing the goods to have been delivered in good condition, generally answers the purpose. Goods shipped in this condition to foreign countries are bound to arrive in a more or less damaged condition.

Even with a short prune crop in France and a good demand for California prunes throughout Europe, the competition between local exporters is very keen and close prices are named. But if our export trade is to be maintained and extended a standard package must sooner or later be adopted, one sufficiently strong to not only successfully withstand shipment from California to Germany, but that will withstand reshipment from Germany to interior points for local distribution.

I do not wish to be understood that all shipments of California cured fruits to Europe are made in this apparently careless manner, but I am sorry to say that many of them are. It might be found wise to adopt a No. 1 and No. 2 grade of export package, both of which should be made sufficiently strong to withstand careless handling in transit. You might go a step further, and, through the assistance of the California Cured Fruit Association and the California Packers' Company, establish a C. I. F. price on California prunes in bags. The price for packing in standard packages No. 1 and No. 2, having been previously established, the matter would then be up to the foreign buyer as to what style of package he desired. Naturally foreign buyers are alive to the competition they meet with and are as anxious as buyers generally are for low prices. But with a standard package adopted with special reference to the export trade, the anxiety of the foreign buyer to purchase at a low price, accompanied with the strong desire on the part of California exporters to fill every order in sight, could not, under the conditions outlined above, result in serious injury to the cured fruit trade in foreign countries.

In simply discussing the export trade from a package standpoint it is taken for granted that the quality of the fruit is fully up to samples submitted and the style of packing is acceptable to purchasers. This being true, the package, conforming to the wishes and ideas of the foreign trade, will add materially to the future of the export business. I would recommend that this convention appoint a committee of five on standard export fruit packages.

Upon motion, the address was received and placed on file.

SELECTING AND HANDLING FRUIT FOR EASTERN SHIPMENT.

By F. H. BUCK, of Vacaville.

I have been requested to read a paper on selecting and handling fruits, just to fill up the programme, and as every fruit-grower knows how to handle fruit a little better than his neighbor, any advice on this subject would seem to be superfluous. However, as there are no fixed rules for handling fruit, the subject is open for argument.

The first step would be a thorough and judicious thinning of the fruit while growing on the trees in order to have a merchantable quality of fruit, and is the most important, for if the fruit has been properly thinned out, it then requires very little grading or sorting for shipment. In general, I would say that the most successful fruit-growers are those who grow a variety of fruits ripening successively, thus prolonging the season for harvesting as much as possible, requiring less labor to handle a large crop, and by giving more constant employment making it much easier to procure competent help. The grower who is in a position to ship East a portion of his crop green, sell a portion to the cannery, and dry the balance at home, is nearest to being independent.

In selecting fruit for Eastern shipment, experience has taught us that with proper care in picking and packing, and reasonable service from the transportation companies, we can successfully market in the East cherries, apricots in limited quantities, peaches, pears, plums, prunes, nectarines of colored varieties, and grapes. Exceedingly large fruit is not always profitable, particularly of peaches; a medium-sized peach that will pack about sixty to eighty peaches to the box of twenty pounds being most desirable. This also applies to pears, four and five tier pears being most in demand, there being only a limited demand for extra large fruit of these varieties, and simply for show purposes. Of plums and the smaller fruits, the reverse is true, size being a very important factor, the large showy varieties of plums, prunes, apricots, and cherries being most in demand. In selecting fruit for Eastern shipment, the first and most important factor is color. The most showy high-colored fruit always commands the highest prices. The fruit should be picked about two or three days before being perfectly matured and while still firm, as it is necessary that it should arrive at destination with sufficient life to stand reshipment in order to obtain best results. After picking, the fruit should be handled as carefully as possible to avoid bruising, as the bruised piece of fruit always starts the decay; all wormy fruit should be carefully rejected for the same reason. Anything that tends to give the buyer the idea that extra care has been used in the packing will pay. For this reason the packages should be made of new, clean, white pine shooks, and carefully and evenly nailed together by experienced boxmakers. The sale of really first-class fruit will be injured by being offered in slovenly made packages. Peaches and pears sell best packed in boxes—peach boxes holding about twenty pounds each, and pears in boxes twice the depth, holding about forty-five pounds. Each peach or pear should be wrapped in a separate paper and packed tightly by breaking joints until the boxes are full. Apricots, plums, prunes, nectarines, and grapes are best shipped in crates holding four baskets each, all except grapes (which are packed solid) being packed in layers with a fold of paper between. In finishing the top layer or face each fruit should be packed with the same side up, thus giving a perfectly uniform surface. Cherries are packed in layers in smaller, flat boxes holding about ten pounds each. Our cherry shipments have proven generally successful, and there is a growing demand for them. Apricots have only proven successful to a very limited extent from the earliest districts, not being popular as a fresh fruit in the East. Peaches from California are very popular with the trade East, on account of their keeping qualities for reshipment, and will always be in demand. Our pears, plums, prunes, and grapes are our staple deciduous fruits for Eastern shipment, as in those varieties we so far excel the Eastern fruit that there is not so much competition as with peaches. Uniformity of packing is one of the most essential points for success—not only uniform quality of fruit all through the package, but uniformity of packages as well—so that when a buyer buys a lot of fruit by one sample box, he may find every box alike, as the buyers soon come to know such brands and will pay accordingly. Fruit intended for Eastern shipment should never be handled on anything but spring wagons and carefully covered to exclude dust. In other words, to make a success of shipping green fruit East, always imagine yourself the buyer and ship what you would buy if you were he, and what you would not buy do not expect the Eastern dealer to be satisfied with.

RESOLUTIONS.

Preservation of Bird Life.—The following resolution, regarding the preservation of birds, was offered by W. O. Emerson:

WHEREAS, The recent activity in scientific investigations, having for its object the determining of the economic value of bird life to the agriculturist and fruit-grower, has proven beyond a doubt that the birds annually render to man inestimable benefit as destroyers of noxious weeds, insects and rodents; and

WHEREAS, Many agricultural districts have been largely depopulated of bird life through ruthless slaughter on the part of thoughtless persons; now be it

Resolved by the California Fruit-Growers in Convention assembled, That it warmly indorses the protective act proposed by the Cooper Ornithological Club of California, and that the members of the convention hereby guarantee the bill their earnest support at the time of its presentation before the State Legislature in January next.

TEXT OF THE PROPOSED BILL.

"Every person who shall take, gather, or destroy the eggs or nests of, and every person who, in the State of California, shall at any time hunt, shoot, shoot at, take, kill, or destroy, buy, sell, give away, or have in his possession, any wild bird (except those species designated, generally known, and already protected as game birds), or who shall expose or have in his possession for sale, any part of the plumage, skin, or body of any bird so protected, except as hereinafter provided, shall be guilty of a misdemeanor; *provided further*, that nothing in this section shall prohibit the killing of the English sparrow at any time, by anybody, or prohibit the killing of any bird, except by means of poison, by the owner or tenant of any premises where such birds are found destroying berries, fruits, or crops growing on such premises.

"Certificates may be granted by any incorporated society in natural history within the State, through such persons or officers as said society may designate, to any properly accredited person of fifteen years or upward, permitting the holder thereof to collect birds, their nests or eggs, for strictly *scientific purposes only*, or to keep native birds alive for study. The certificates authorized by this section shall be in force only one year from the date of their issue, and shall not be transferable. This Act shall take effect upon its passage."

Referred to Committee on Resolutions.

The foregoing resolution was not approved by the committee, and was referred back to the convention for action.

After further consideration by the convention, the same was adopted after an amendment was made striking out the clause regarding the poisoning of birds.

Pan-American Exhibition.—The following resolutions regarding the sale and exhibit of California fruit at the Pan-American Exhibition at Buffalo were here read and referred to Committee on Resolutions:

Resolved, That it is the sense of this Convention of Fruit-Growers, that a committee of five be appointed to put into effect, if feasible, the suggestion of Hon. W. H. Mills, relating to the sale and exhibit of California fruit at the Pan-American Exhibit, at Buffalo;

Resolved further, That the committee so appointed put the scheme into effect, if considered feasible by them, without incurring any indebtedness, so far as this convention is concerned.

The committee reported favorably on the foregoing resolutions, and the same were adopted by the convention.

The Chairman of the Marketing Committee reports that another committee, known as the Committee to Organize the Deciduous Fruit Growers, has made the Committee on Marketing unnecessary and superfluous. They beg leave to so report, and ask that this convention excuse them from any further report.

On motion, the request was granted.

California Bureau for Washington.—Mr. Isidor Jacobs offered the following resolutions, and the same were referred to Committee on Resolutions and reported back favorably:

Resolved, That the Fruit-Growers of California, in convention assembled, recommend to the Legislature that a California Bureau be established in Washington, D. C., and that they appropriate sufficient money to put the said bureau into effect.

Resolved further, That the objects of said bureau, if established, is to watch all of California's interests, in reference to reciprocity treaties, interstate commerce matters, and other subjects affecting the interests of California.

Protection for the Meadow-Lark.—The following resolution was read and referred to the Committee on Resolutions, and returned with their approval, and adopted by the convention:

WHEREAS, All the other Western States in the Union, especially Oregon, Washington, Utah, Colorado, Montana, and Nevada, protect the meadow-lark by special laws;

WHEREAS, California, with the possible exception of Georgia, will be the only State in the Union specifically exempting the meadow-lark from protection, if Section 626, clause 6, of the proposed new game law becomes a law;

WHEREAS, Many representative farmers and fruit-growers have testified to the value of the meadow-lark;

Resolved, That in view of these facts the California Fruit-Growers' Convention protests against excluding the meadow-lark from protection, and earnestly beseeches the Legislature to pass such laws as will preserve this bird, the most valuable of weed and insect destroyers and most charming of songsters, and it urges all citizens to join in commending and furthering this course of action.

Reciprocity Treaties.—Isidor Jacobs offered the following resolutions regarding reciprocity treaties, which were referred to Committee on Resolutions:

WHEREAS, The Fruit-Growers, in annual convention assembled, have noted with alarm the tendency toward the negotiation of commercial, or so-called "reciprocity treaties," which vitally affect California and her interests; therefore be it

Resolved, That we denounce and protest against all such treaties which tend to lower the protective tariff on any American product ; and be it further

Resolved, That we denounce the principle of treaties, affecting the tariff, being negotiated in secret by our Government; and be it further

Resolved, That this resolution be presented to our State Legislature by a committee composed of the present Committee on Legislation appointed by this convention, and that a copy of these resolutions be transmitted to each of California's Congressional delegation.

Convention adjourned until 2 o'clock P. M., December 7, 1900.

AFTERNOON SESSION—FOURTH DAY.

FRIDAY, December 7, 1900.

Convention reassembled at 2 P. M. President COOPER in the chair.

HYBRIDIZATION AND SELECTION.

ADDRESS BY PROF. DAVID STARR JORDAN, OF STANFORD UNIVERSITY.

I want to touch on the theory of a work which is to play a large part in the future progress of fruit-growing; that is, the formation of new varieties by the process of hybridization and selection. I think more has been done in this direction in the last twenty years than ever before in any century, and I think it is also true that we are in the very beginning of the formation of valuable kinds of fruit, as of valuable kinds of domestic animals, and that the next century will show extraordinary advance. I think more has been done in California than in any other part of the world in the way of getting on the right track in the matter of selecting new varieties. I think Luther Burbank is the easy master of that business, and California should be proud of his work. The theory of forming new varieties is simply regarding the animal as a machine for accomplishing certain results. This particular animal takes roots or leaves of plants into his substance, and then assimilates and works that over into his own substance, and is again able to give out the same amount of power. So we see the same amount of force went into him as is put out again in the force with which he runs about. When we come to examine him closely we find that he is not a single unit, but a great many forces working together. We call these little bunches of force by the name of cells, little pieces of matter called protoplasm, and in this all processes of life take place. There are animals and plants made up of single cells, but the more complicated animal like the chipmunk or man are made up of a great many cells. The cells in the animal and plant are of much the same general character. The animal moves as a whole, the plant does not move; the animal has locomotion, the plant has not; that is all the real difference. The animal consumes food that has been alive, the plant makes its own food out of water, earth, and sunshine; but the two are essentially the same. The whole animal, when it is complete, works together as a whole, although it may have a great many cells of different characters. Animals have the power, and plants as well, to cast off certain cells, and these cells have the power to build up a new animal, such an animal as the original was. We know the plant can cast off a seed, which is primarily a cell; and in casting off this seed it has the power to reproduce, with almost perfect accuracy, a tree like that from which it came. This walnut seed will produce a walnut, this orange seed an orange, and nothing else. It has the single power of reproducing something like the original from which it came. All these cells that are cast off reproduce the original animal; and in order to perfect them nature has a provision whereby these ripening cells will not develop under most circumstances unless there are two parents. One of these is the male and the other a female. There are certain types of life where the cell thrown off by the female will develop by itself, but this is in the low types. In the higher types of animals and plants it is necessary that the cell cast off by the male should be united with the cell cast off by the female before there is any devevelopment of a new organism. It is necessary that two cells be joined together to form a new one, but this new one does not have the character of the single parent but of the two. Now this is a provision of nature for variation. There are no two animals or plants in the world exactly alike, and the reason for this is the fact that no two parents are exactly alike, and each individual animal must have two parents. In every individual there is a new combination, and that is why each one of you has a different face from any one else. You have had a different set of parents, except in the case of brothers and sisters. In the case of brothers and sisters nature has provided for variation, for we find that inside of the cell there is a mass of loops and bands and ribbons, and in this we find that the hereditary qualities are located. We have found that whenever this little band is moved from one egg to another, as can be done sometimes, they will carry all the hereditary qualities with them. Now, the cell always is formed by the splitting of some previous cell, and when a cell is split you have in each part a whole series of these ribbons and bands split endwise, and the two new cells take the place of the old one. Whenever a germ cell is formed it is by the splitting of some old cell, and we find the splitting is enough different to cause a little shifting of the material. No two grains of pollen in a plant are ever exactly alike; no two ovules in a flower are ever exactly alike; and, therefore, no two plants that spring from these seeds can be exactly alike. You have first the forming of a new individual by the union of two different parents, bringing in variety every time. So we have the forming of different individuals by having a little difference in the germ as well as a little difference in the egg. Therefore, by watching these principles of hybridization and selection, man, if he work at it long enough, can produce almost any sort of an animal or plant that he desires where you have the variations; but where there is no variation in any direction you cannot do it. For instance, you could take a sheep, and by breeding only those with short tails you would at last secure a sheep without a tail; but you could not breed to secure a blue sheep, for the reason that you have no variation in that direction. It is along these lines that changes for the better are going to be made in the fruit-grower's profession; and California is taking the lead in the matter of its development by scientific work and in the practical application of the theories.

A vote of thanks was tendered to Professor Jordan, which was carried by a rising vote.

NICARAGUA CANAL.

The following resolutions in regard to the Nicaragua Canal were reported to the convention by the Committee on Resolutions, and adopted by the convention:

Resolved, That the fruit-growers of California, in convention assembled, hereby urge upon our Representatives in Congress the importance to the State of immediate and favorable action looking to the immediate construction of the Nicaragua Canal;

Resolved further, That the San Francisco Chamber of Commerce, State Board of Trade, and all kindred bodies interested in the welfare of California and her industries, be asked to call immediate meetings and forward petitions to Congress, urging immediate and favorable action.

STANDING COMMITTEES.

Vice-President Wickson announced the following standing committees:

On Labor.

Isidor Jacobs, San Francisco.
L. F. Graham, San José.
H. W. Meek, San Lorenzo.
William Thomas, San Francisco.
Philo Hersey, San José.

On Suggestion of W. H. Mills, with Reference to Pan-American Exhibition at Buffalo.

Gen. N. P. Chipman, Red Bluff.
A. R. Briggs, Fresno.
C. M. Wooster, San José.
Frank Wiggins, Los Angeles.
R. D. Stephens, Sacramento.

On Fruit Packages.

B. N. Rowley, San Francisco.
R. W. Hersey, San José.
A. J. Hechtman, San Francisco.
A. G. Freeman, San Francisco.
W. Griffen, San Francisco.

THE CALIFORNIA SMYRNA FIG.

BY GEORGE C. ROEDING, OF FRESNO.

There is an old saying, "Enjoy life under your own vine and fig tree," which is indicative of the many attractions of California horticultural life. No fruit tree has adapted itself so universally to such a variety of soils and climates as the fig; hardly a yard in our country towns, or a ranch, although it may be void of other trees, that is not adorned with a few fig trees, appreciated not only for their beneficent shade and easy culture, but for their fruit as well, which is so palatable and nutritious in so many different forms.

In the interior valleys the fig is one of the attractive features of our rural landscapes. Despite the fact that it is common from one end of the State to the other, no tree is so little understood—has been the cause of so much misunderstanding or discussion—as this very common fig tree.

WHAT IS A FIG?—Do you ever see its flowers? To the layman it simply represents a mass of pulp inclosed in a thin skin. To the botanist, the outer covering is a receptacle for the thousands of inconspicuous flowers, and the whole is called an inflorescence.

What is a Smyrna fig, and in what respect does it differ from other figs? The general character of the tree and fruit is apparently the same as in other figs, and the only guide a grower has, that his trees may possibly belong to the Smyrna class, is that their fruits never mature.

A proper understanding of the subject can only be arrived at by dividing the edible fig (*Ficus carica*) into three classes:

(1) The Wild, or Capri;
(2) The Smyrna;
(3) The Adriatic;

These being distinguished from one another by their flowers, viz: male, female, gall, and mule flowers.

THE WILD, OR CAPRI, CLASS.—It is from this class undoubtedly that all species of edible figs sprung, and the improved fruit is the result of years of cultivation and hybridization. The only value this class of figs possesses is to furnish a home for the minute wasp, *Blastophaga grossorum*, for it is only in it that the insect can breed and exist.

It produces three crops annually, the first being known as Profichi, pushing out from the current season's wood in March and maturing in June; the second crop, known as Mammoni, budding out as the first crop ripens, and maturing in August; and finally the third, or second Mammoni crop, making its appearance as the first Mammoni ripens, and maturing from October to December, part of which crop remaining dormant on the trees during the winter and not ripening before April of the following year; the insect during this period remains in the galls in the larva state.

The Capri figs contain three kinds of flowers: male, female, and gall flowers, the number varying in a greater or less degree in the several crops. But there is only one crop which produces an abundance of male or staminate flowers, and that is the Profichi; so, consequently, this is the only one of any value to the Smyrna class. The succeeding crops serve only as a habitat for the fig wasps.

SMYRNA CLASS.—This embraces all varieties of figs which do not mature without the agency of the insect or by artificial pollination. Two distinct crops are produced annually, both of which contain female flowers, the first appearing on the current year's wood in March and maturing in June, called "Brebas"; the second, on the new wood just as the former is ripening.

Only a few of the Brebas mature; the bulk of them drop to the ground when quite small, and those which do mature, although large, contain nothing but hollow seeds and lack flavor and substance. Their character can never be changed, for when their flowers are receptive there are no pollen-producing Capri figs.

The second crop commences to mature in Fresno County during the middle of August, and continues to ripen up to the middle of October, although the crop is practically harvested in September.

ADRIATIC CLASS.—This embraces all the sorts which mature their fruits without the agency of the insect, and they can never be improved, for they contain mal-formed female or mule flowers, which cannot be fertilized.

There are a hundred or more sorts of this class growing in California; included among them are the Old Mission, or California Black, White Adriatic, Brown Turkey, etc.

The White Adriatic has been more extensively planted for drying purposes than any other, but it is admitted by all having a knowledge of figs that it has nothing to recommend it, and, no matter how manipulated or processed, it can never be made to compare with the imported fig. So well is this fact known, that our figs are rushed to the Eastern market as rapidly as possible, so as to take advantage of a "bear" market, the trade recognizing the fact that California figs are very slow sale when the imported article makes its advent.

CAPRIFICATION.—The Capri fig stands in the relation of male to the Smyrna fig, although from the preceding remarks it will be understood that it is only in one crop that male flowers are produced in a quantity to be of any value.

Now follow the insect in its various stages. It over-winters in the second Mammoni crop and emerges in April. The male insect, which is wingless, issues from the gall first—it never leaves the fig. Crawling around, it locates the galls containing the females, makes an opening with its powerful mandibles and impregnates them, and then dies. The female enlarges the opening made by the male, crawls through the orifice of the fig which is then open, and flies to a Profichi fig, the gall flowers of which are then ready to receive the egg. (Note the fact that this is in April, and that this is the very same fig whose staminate or male organs do not mature before June.) The insect forces its way into the fig, using a saw-like protuberance under the thorax for that purpose, and loses its wings in the operation. Once inside, it crawls around and deposits one egg in each of the ovaries of the gall flowers. The insects in these galls mature in June; the females in this instance, in passing out of the fig, go through the zone of male flowers surrounding the orifice, which are then mature, and get their bodies and wings dusted with pollen.

During the past season, the caprification of the Smyrna Fig Orchard at the Fancher Creek Nurseries was conducted under the able supervision of Mr. E. A. Schwarz, of the Division of Entomology, Department of Agriculture, Washington, D. C.

How It Was Done.—In order that the work should be expedited, the men employed were divided into three crews; one crew picked the figs, and where they were beyond reach they were pulled off with a light bamboo pole, having an iron loop at one end; another sewed the figs on strings of raffia, from two to four figs on each string; while the other crew was kept busily engaged in hanging the figs in the Smyrna fig trees, from twelve to twenty figs being suspended in each tree. Only about one fifth of the 4,200 Smyrna trees were caprified; a large number of figs were not pulled, so that the first Mammoni crop should be fully supplied with insects.

The insects do not all issue in one day, but the flight lasts over a period of from five to eight days, from fifteen to fifty insects issuing from each fig daily, occurring chiefly during the morning hours. The female having selected a Smyrna fig suited to it, goes to the orifice and forces its way in, losing its wings in the same manner as when it enters the Capri fig. Once inside, it endeavors to lay its eggs, but the styles of the female flowers are so long that it is unable to do so. In its vain efforts to find a depository for them, it crawls around in the fig, fertilizes the stigmas of the female flowers then in the receptive stage, and thus, although it sacrifices its own life, and fails to propagate its species, it paves the foundation for the propagation of new fig trees, from the fertile seeds which are produced, and which could otherwise only be raised from cuttings, as well as for bringing to perfection a fig which can well be named a "king" among its kind, and which, without its aid, would dry and shrivel up.

Having provided for the figs which delight the palate, we again turn to our valuable little friend, and carry it through to its winter quarters.

THE INSECT IN WINTER.—From the Profichi figs remaining on the Capri fig trees, the insects pass into the Mammoni crop carrying pollen on their bodies and wings, fertilizing the isolated specimens of female flowers, and depositing their eggs in the gall flowers and then perishing, having in this case not only propagated their own species, but having been the means of providing for the propagation of new Capri fig trees, from the fertile seeds which the fig contains. The first Mammoni crop matures in August, and the wasps pass from this to the second Mammoni. This crop ripens from October 15th to December 1st. As stated before, many of the figs—and there are between thirty and forty thousand on my Capri trees to-day—will remain green and dormant during the winter months. The figs which mature are of two classes: Those which contain nothing but female flowers, the insects being entirely absent, known as pulpy figs, and although edible are rather insipid; and those producing a normal fig, from which the insects issue the same as in prior crops.

Nature evidently lost a link in permitting this fourth generation of insects to issue, for the greater portion are lost, there being but very few young figs, and from a practical standpoint no figs for them to enter. I beg to call attention to the fact that the word *Mamme*, meaning the last crop of Capri figs, has by common consent of Mr. Schwarz and myself been discarded as not fitting the conditions with the Capri figs here.

DEVELOPMENT OF THE SMYRNA FIGS.—The metamorphosis of the caprificated Smyrna figs is one of the striking features in connection with this subject. Within a week after the Smyrna fig has been pollinated, it is readily distinguished by its healthy green color, absence of ribs, and firmness. The unfertilized fruits are of a dull, yellowish green, the ribs are distinctly outlined, and when pressure is exerted the fig collapses.

GATHERING AND DRYING.—The theory so often advanced by correspondents from Smyrna, as well as by others who claim to know something of this fig in its native home, that it lacked flavor—in fact, was tasteless in the fresh state—has been amply controverted during the past season, it being universally conceded that the Smyrna fig in the fresh state surpasses anything in the fig line ever produced in California, and as one well-known writer says: "Cut in two, a ripe Smyrna fig seems completely filled with a solid, almost water-white jelly, in parts appearing not unlike strained honey, while throughout the mass are seeds, and the seeds in this case are fertile, each a small perfect nut and not, as with common varieties, an empty shell."

No fig is more easily or less expensively handled than the Smyrna. The figs should never be picked, but should be allowed to drop to the ground of their own accord; if picked from the tree, the resulting product lacks flavor, substance, and richness of pulp, the three characteristics which place this fig preëminently in the lead of all others. The fallen figs are gathered from the ground every other day, and then transferred to the drying ground, where, before placing on the trays, they are dipped in a boiling hot brine, which gives them a glossy appearance and hastens drying. They are never sulphured, as the fig has a skin which is naturally white, and even if it had not, no sulphur should be used, as this pernicious practice, although giving the fig a fine appearance, and catching the eye, gives it a sour, acrid taste, and has done more to injure, from a consumer's standpoint, the sale of California figs than anything else in connection with this industry. The figs are practically dry when they fall, so that two or three days' exposure is all that is necessary. The figs are turned daily on the trays by placing an empty one over a filled one, and, with a dexterous twist of the hand, the figs are transferred to the empty tray. No particular attention is necessary as to the manner in which the figs are placed on the trays, or whether the figs touch each other or not. Trays with slats, with spaces between, should be used in preference to all others, as they permit a free circulation of air, and the figs, in consequence, dry more evenly. To determine the proper degree of dryness, take a fig between the fingers in the early morning, before it has become warm, and if it has a leathery feeling to the touch, or if the neck of the fig is found to be dry, no further exposure is necessary. The danger with the inexperienced workman would be to overdry, for the reason that the figs are so meaty and full of substance that it would lead one to believe that the fig was not fully dried, when it really was.

AFTER-TREATMENT.—Before placing the figs in the sweat-box, the workman should go over the trays, carefully sorting out all insufficiently dried figs for further drying. Pack the figs tightly in the sweat-box, so that they will go through a sweat and the moisture be equalized. They should occasionally be transferred from one box to another; a far better method, however, is to place them in a close room, on a clean floor, turning them every few days with a scoop shovel. After three weeks they are ready for packing. Before packing they should be washed in a trough containing a strong cold brine. All floating figs should be removed, as they are either improperly fertilized or over dried, and for this reason are inferior. Those remaining should receive a good rubbing between the hands to remove all the dirt, and then placed on trays about six inches deep and exposed to the sun for a few hours, to permit the surplus moisture to evaporate, when the figs are again placed in boxes preparatory to packing.

PACKING.—This work was performed entirely by girls, and the product, something over six tons, was packed in a similar manner to all California figs. An entirely different and distinct plan of packing will be adopted in the future, so that the California Smyrna figs will have some prominent characteristics to distinguish them from the imported as well as the inferior home product.

VARIETIES.—There are growing on the Fancher Creek Nurseries seven distinct varieties of Smyrna figs. One is purple or black; another is grayish green, bringing another point to the notice of our horticulturists, that there are other figs besides the White Smyrna. The value of many of these varieties for drying purposes has not been fully determined, not enough being produced during the past season. That the California Smyrna fig is deserving of a place of honor is evidenced by the fact that a recent analysis made at the Agricultural Department of the State University at Berkeley showed that this fig contained 63.92 per cent of sugar, which was almost 2 per cent more sugar than found in the best grade of the imported article.

There are also three distinct varieties of Capri figs growing on the place, the names of which are not known, and they have therefore been designated by numbers: No. 1, No. 2, and No. 3. The idea which has been presented by several scientific men, who have made a study of this subject in the old country, that it was necessary to have an assortment of Capri trees to produce the several crops and carry through the successive generations of insects, is not borne out by our experience here, as it has been found that all three varieties are very prolific bearers of the Profichi crop, and that the No. 1 variety is capable of producing all the crops required for the successful propagation of the insect; while the other two varieties are rather uncertain bearers of the Mammoni and second Mammoni crop.

Each variety has some point in its favor, however. No. 1 is the first to mature its Profichi figs, so that the first Smyrna figs in the receptive stage receive the benefit of this pollen; the No. 3 is the next one to mature this crop, and it is particularly valuable on account of the large size of the fruits, containing more galls with insects than either of the others; the No. 2, which matures last, prolongs the season of caprification of the Smyrna fig.

In addition to the varieties growing at the Fancher Creek Nurseries, there are also five or six others growing at the California Nursery Company's plant at Niles, some of them having been introduced by Mr. John Rock and the others by Dr. Gustav Eisen.

When all these varieties are brought together and are growing on one place, many new and important developments will no doubt be brought to light.

Recommendations.—In planting an orchard of Smyrna fig trees, none should be closer than twenty-five feet, and even at this distance, on ordinary good soil, it will be necessary, after fifteen years, to cut out every other tree. Capri trees should be planted in a group by themselves in the orchard, and not planted in one row, if the best results are to be obtained.

Future of the Industry.—The successful culture of the California Smyrna fig means much for this State; it means that a new industry has sprung into life, that thousands of acres of land unavailable for other purposes will be open for cultivation, and last but not least, it means a permanent increase in California's annual income.

RESOLUTIONS OF RESPECT TO HON. ELLWOOD COOPER.

Professor Childs offered the following resolutions:

Resolved, That the fruit-growers of California, in convention assembled, desire to express their earnest appreciation of the eminent services rendered to the fruit interests of California during the last quarter of a century by Hon. Ellwood Cooper, of Santa Barbara, who has been President of the California State Board of Horticulture since its establishment.

Resolved, That we note with undisguised pleasure the evidence of continued physical vigor and mental force in our distinguished veteran leader in the able manner in which he has presided over this the twentieth convention which has enjoyed his direction and profited by it.

Resolved, That we desire to declare our thankfulness to Almighty God for his goodness in continuing the life and strength of our honored associate, and that we humbly pray that he may still be spared for many years to continue his honorable and patriotic work.

Adopted by a rising vote.

ISIDOR JACOBS. I move that this resolution be engrossed and a copy presented to our distinguished President.

Motion carried unanimously.

President COOPER. Referring to the resolution offered by Professor Childs, I would like to say that I am too much embarrassed to say a great deal; but if I had known what that resolution was I would have declared it out of order. I feel thankful and grateful for any such expression. The idea that was in my mind when I stated what I did in the opening address with regard to the number of years I had held this position, was inspired or instigated by the letter of Dr. Daniel C. Gilman, of the Johns Hopkins University of Baltimore, when he said he was over seventy years old and that he thought it would be better for younger men with greater physical and other abilities to be in that position, and therefore he wished to retire. For that reason I thought perhaps it would be best for the fruit-growers of the State of California to have a younger man with newer ideas to hold the position I now occupy. Consequently, I made that statement in regard to myself in the opening address, for which I hope you will accept my apology. It is never proper for any one to speak of himself unless under extraordinary circumstances. I thank you from the bottom of my heart for your kind expression, and I will state that I will be with you as long as I have the physical power to do so.

Mr. R. D. STEPHENS. I move that a vote of thanks be extended to B. N. Rowley for his efficient services as chairman of the Committee on Arrangements and Exhibits.

Motion carried.

Gen. CHIPMAN. I have attended these conventions in former years, but not regularly latterly. I want to testify, however, to the progress in the intelligence and enthusiasm and patriotism of the fruit-growers of the State of California to-day. I do not believe in the past few years that I have been at a convention of any kind where so much intelligence was displayed as has been evinced by this convention. It shows that our people are progressive; and I want to testify that I have never seen, in any deliberative body, a better presentation of subjects than has been presented here. You will see that the program covers the widest possible field of agriculture and horticulture, which shows conclusively that fruit-growing is, after all, the glory of California.

ORGANIZATION OF DECIDUOUS-FRUIT GROWERS.

Mr. Theodore Kearney here offered the following report of the committee appointed to formulate a plan to organize the deciduous-fruit growers:

After a careful consideration of the matter, the committee heartily approves the proposal that the fresh-fruit growers form an association of their own for the purpose of handling fresh fruits. The California Cured Fruit Association, through its president, Judge Bond, states that it is the purpose of that association to continue the canvass among producers of dried fruits in order to increase its usefulness and carry out the original intention of its organization. It will therefore work in harmony with those who desire to form the fresh-fruit growers' association.

The proposal to form a fruit producers' council of one representative, to be elected by each fruit or nut organization of the State now organized, or that may hereafter be organized (such representatives to be one delegate from each of the following industries: Citrus fruit, olive, walnut, almond, raisin, cured fruit, and fresh fruit growers), is one which we consider to be of supreme importance to those industries and to the general welfare of the State; and we therefore recommend:

1. That the convention call a meeting of the delegates of all the fresh-fruit producers of California, to consist of from one to five persons from each school district in the State

where fresh fruit is produced, to assemble in Sacramento on the third Tuesday in January, to meet at one o'clock at a hall to be hereafter announced.

2. That the convention call a meeting of delegates, consisting of one representative from each of the industries above enumerated, at the Palace Hotel, in San Francisco, at 11 A. M. on the second Tuesday in January.

Respectfully submitted.

M. T. KEARNEY, of Fresno, Chairman.
JUDGE H. G. BOND, of San José.
JOHN S. DORE, of Fresno.
H. W. MEEK, of Haywards.
H. P. STABLER, of Yuba City.
T. B. MERIAM, of San Diego.
W. B. GESTER, of Loomis.
C. E. BARNES, of Suisun.
GEN. N. P. CHIPMAN, of Red Bluff.
A. H. NAFTZGER, of Los Angeles.
JOHN MARKLEY, of Geyserville.
COL. H. WEINSTOCK, of Sacramento.
COL. PHILO HERSEY, of San José.
G. W. PUREN.
E. A. GAMMON, of Courtland.

ALFRED BARSTOW, Secretary of Committee.

On motion of R. D. Stephens, the report was adopted.

ISIDOR JACOBS. I move that the committee of fifteen appointed by this body to formulate a plan for organization proceed as soon as possible to accomplish that object.

Motion carried.

PRESIDENT COOPER. The sentiment of the convention should now be taken on the subject of the meeting place for one year hence.

MR. JACOBS. I move that this matter be left in the hands of the State Board of Horticulture for decision.

Motion carried.

PRESIDENT COOPER. I want to thank you personally for your genial manner, and the intelligence and interest you have displayed during this session. I thank you also in behalf of the State Board of Horticulture.

Upon motion, the convention adjourned *sine die*.

B. M. LELONG,
Secretary.

REPORTS

OF

County Boards of Horticultural Commissioners.

REPORTS OF COUNTY BOARDS OF HORTICULTURAL COMMISSIONERS.

ALAMEDA COUNTY.

Report of Commissioner Barry.

To the Honorable the State Board of Horticulture:

GENTLEMEN: I herewith respectfully submit my annual report as Horticultural Commissioner for Alameda County, for the year ending October 8, 1900.

The season for the handling of nursery stock commenced November 24, 1899, and continued up to May, 1900. The amount shipped has been far above the average, the varieties being citrus, olive, and all kinds of deciduous fruit trees. The total number handled at this station was 542,648, to which may be safely added 250,000 of which I have kept no record.

The nursery stock was generally in good condition, with the exception of some Eastern that was brought in by a San Francisco firm from Iowa and Kansas, which upon examination proved to be infested with peach-root borers, and was condemned and burned.

The fruit industry in this locality has on the whole resulted very satisfactorily. Apricots and prunes were a full crop, cherries a good crop, almonds and peaches half a crop. The grape crop in the eastern part of the county looked anything but promising in the first part of the season, as many vineyards were killed by frost, but reports to-day are indicative of a much better crop than was expected in the spring; the western part of the county escaped the frost, and will produce a good crop of grapes.

The prices for all deciduous fruits have been satisfactory whether sent to the cannery or sold in a dried state.

All orchardists in the district report clean, marketable fruit, and entirely free from smut. The only pests we have are the black scale and the brown apricot scale, but the *Rhizobius ventralis* and *Comys fusca* are doing good work, in some orchards having completely cleaned out both scales.

There has not been any spraying done here since 1893. Olive trees that only two years ago were smutty are now bright and clean, showing the good work of the *Rhizobius ventralis*.

I am sorry to have to report the appearance of the "brown rot of stone fruits" (a parasitic fungus known as *Monilia fructigena*) in this county. It appeared first in Moorpark apricots, but lately I have found it in the peaches, silver prunes, and Washington plums.

The following letter speaks for itself:

UNITED STATES DEPARTMENT OF AGRICULTURE,
DIVISION OF VEGETABLE PHYSIOLOGY AND PATHOLOGY,
WASHINGTON, D. C.

PACIFIC COAST LABORATORY,
SANTA ANA, CALIFORNIA.

SANTA ANA, CAL., July 25, 1900.

MR. WM. BARRY, *Horticultural Commissioner, Niles, Cal.:*

DEAR SIR: Your letter of the 17th instant reached Santa Ana while I was in Northern California. On the 20th instant I visited Niles, and the same rot of apricots to which your letter refers was shown me while there.

The disease to which you refer is known in the East as "brown rot of stone fruits." It is caused by a parasitic fungus known as *Monilia fructigena*, and is one of the most destructive diseases which affects the peach and other stone fruits in the East. Under favorable conditions of heat and moisture this fungus is capable of destroying nearly an entire crop of fruit, and develops very rapidly under such favoring conditions. It is a most serious disease in regions where the moisture and heat are considerable at the season when the fruit is ripening.

The affected fruit dries upon the trees in many instances, producing what have been termed "mummified" fruits. The fungus lives in these fruits over winter, as well as in the twigs to which such fruits are attached. It is therefore advisable to cut away and burn all such dried fruits and affected branches, and in case the disease has obtained a good foothold in an orchard it will be well to spray the trees thoroughly with the Bordeaux mixture before growth starts in the spring.

Even the treatment here recommended will not save the crop in many cases where the seasonal conditions favor the fungus.

I noted the fact while at Niles that you are allowing this spore-covered fruit to be sent to a central drying-house. Such a system as this will result in the early spread of the disease, by means of spore-covered boxes, trays, wagons, etc., to all parts of the valley and region about, and would probably result in the loss of hundreds of thousands of dollars' worth of fruit in the next few years. If the disease is limited to one or a few orchards at present it is a matter of congratulation, and advantage should be taken of this fact to prevent the spread of the fungus to the peach, apricot, cherry, and prune orchards of that and the adjoining valleys. No fruit and no boxes should be allowed to be sent to a central cutting or canning station, nor to or through other orchards. The strictest quarantine should be declared against the affected orchard or orchards, provided the disease appears to be limited in its distribution.

Very sincerely yours,

NEWTON B. PIERCE,
Vegetable Pathologist.

Respectfully submitted.

WM. BARRY,
Commissioner.

NILES, October 8, 1900.

ALAMEDA COUNTY.

Report of Commissioner Webb.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The pest which we have most to contend with is the brown apricot scale. Formerly it was found on apricot and plum trees only; it has now spread to the pear and the cherry. One year ago I distributed many thousands of *Comys fusca* among the larger orchards, where I knew they would have a good chance to breed. On investigating this year I found some good effects from this parasite, but it was not in large enough quantities to collect from. Next year I hope to be able to find sufficient parasites in my own district and not be compelled to go elsewhere to collect them. Following is a circumstance showing how they migrate from one orchard to another: I visited last June a small orchard situated over a mile from one of our largest orchards, which I had liberally supplied with *Comys fusca*, for the purpose of placing a number of colonies there. Upon examination I found the scale parasitized in greater quantities than any orchard in which they had been placed. After explaining to the owner the benefit that he would derive from the parasites, he promised that he would not spray any more, thereby giving them a chance to get a foothold. I found one apricot orchard in particular that was badly infested with the black scale. After placing a colony of *Rhizobius* in it, I cautioned the owner to refrain from spraying, and to place corn stalks in the trees and await developments.

The San José scale does not appear in large enough numbers to cause any trouble, as they are easily eradicated by the lime, sulphur, and salt wash.

The nursery stock that has come into my district, with a few exceptions, has been in very good condition. That coming from France was particularly clean, showing that they are paying strict attention to our quarantine rules.

I have received from your Secretary a number of copies of a book treating on insect pests and remedies, which I have distributed among the farmers. I consider it a very valuable pamphlet.

Spraying of trees in this district is done by almost all the orchardists; some cases are beneficial for the time, while others, probably through some carelessness, are not at all successful. Considering the dry season, we have had a fair crop, but hardly up to the standard for size.

Respectfully submitted.

EDW. O. WEBB,
Commissioner.

SAN LORENZO, October 8, 1900.

CONTRA COSTA COUNTY.

To the Honorable the State Board of Horticulture:

Gentlemen: During our inspection of the different districts we found orchards more or less infested with San José scale, red spider, codling moth, and other insect pests. We find that the people generally are anxious to do all they can to destroy the pests. In response to our notices many have sprayed their trees, in most cases with satisfactory results.

We also find that in many parts of our county phylloxera has gained a strong foothold and has already done much damage. Many are digging out their vines and planting resistant stock.

We are strongly recommending winter spraying.

We believe the future of our fruit production is bright and that our county will hold its place among California's best.

Respectfully submitted.

W. J. WESTLAKE,
A. M. GRAVES,
J. F. BUSEY,
Commissioners.

Martinez, November 7, 1900.

FRESNO COUNTY.

To the Honorable the State Board of Horticulture:

Gentlemen: Fresno County is known quite generally as the center of the raisin industry of California; but while more than one half of the raisins shipped out of the State are grown and packed in this county, yet this great industry does not represent the entire horticultural field by any means. Even grapes, other than those used for raisins, are produced here in quantities sufficient to place Fresno among the leading counties of the State in the shipment of table grapes and also in the manufacture of sweet wines and grape brandy.

Some six or seven years ago, owing to the heavy importation of foreign raisins and so-called Zante currants, and also on account of the decreased consumption of raisins in the Eastern States by reason of the prevailing hard times, the price of our raisins declined to such an extent that timid growers actually uprooted many thousands of acres of raisin vineyards in this county. They have since seen the folly of such action, and during the past two years planting has been renewed.

According to the individual statements given in to the County Assessor for the present year, there are now 68,460 acres of vineyard in Fresno County, 62,970 acres of bearing vines, and 5,490 acres not yet of bearing age. This acreage is classified as follows:

	Acres Bearing.	Acres Non-Bearing.
Table Grapes	756	190
Raisin Grapes	39,562	2,200
Wine Grapes	22,652	3,100

The season has been favorable on the whole, for both raisin and wine grapes, and it is conservatively estimated that 3,500 carloads of raisins, of ten tons each, and 3,000,000 gallons of wine and brandy will be produced in the county this season. In this connection we deem it proper to mention the recent erection of a plant near Fresno for the manufacture of cream of tartar from the pomace formerly allowed to go to waste at the wineries; and also a by-product plant now being rapidly prepared for operation in the suburbs of Fresno. This latter plant occupies a site embracing ten acres, and olive oil, cream of tartar, and various oils obtained from peach and apricot pits, raisin seeds, etc., will be manufactured, it being intended to work up all the refuse material from the several extensive seeding and packing-houses located in this city.

Within the past few years Fresno County has made wonderful progress in the growth and curing of figs. The present season's output will be in the neighborhood of 500 carloads. One of the most notable steps accomplished in this field has been the successful introduction of the *Blastophaga*, or Smyrna fig wasp, and should the future verify present expectations of those having the matter in charge, the fertilized figs of Fresno will successfully compete in the markets of the world for equal rank with the very best Smyrna fruit, and will prove a great financial success.

Next in importance to figs among the new branches of horticulture undertaken in Fresno County comes the olive. There are 14,896 bearing trees and 19,405 non-bearing trees in orchard now, and the acreage will, from present indications, be largely increased during the next few years.

Citrus fruits are also attracting much attention, especially along the Sierra foothills in this county. In what is known as the thermal belt extensive orchards of oranges and lemons have been planted, while other lands are being prepared for future planting. The citrus fruits of this section are remarkably free from smut, scale, and all insect pests.

The deciduous fruit orchards of the county are generally in good condition, and the present season has been one of exceptional profits to the fortunate owners. According to the latest official figures there are now in Fresno County orchards the following number of bearing and non-bearing young trees:

	Bearing.	Non-Bearing.
Apple	18,560	6,040
Apricot	42,000	31,000
Cherry	815	496
Fig	31,525	3,560
Olive	14,896	19,405
Peach	341,200	225,650
Pear	88,535	45,325
Prune (French)	21,525	7,545
Prune (other varieties)	5,726	3,538
Lemon	3,840	12,385
Orange	19,850	18,345
Almond	3,270	3,580
Walnut	2,680	513

No accurate estimate can be made of the quantity of green and dried fruit shipped out of the county, owing to the policy of the transportation companies to not furnish such data. The executive committee of the Chamber of Commerce estimate the value of these shipments at $1,000,000 annually, and this estimate we believe to be very conservative.

The orchards of the county are, generally speaking, well cared for and reasonably free from disease and insect pests. The apple orchards are an exception to the general rule, but energetic measures promise to greatly improve conditions now existing. In some vineyards the red spider materially damaged the first crop of grapes; however, where detected in time the ravages were effectively stopped before much damage was done.

Very respectfully,

I. L. GRAINGER,
C. M. GLAZIER,
R. F. JACK,
Commissioners.

FRESNO, September 29, 1900.

HUMBOLDT COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: In reviewing the fruit interests of this county, we shall confine ourselves to the apple as being the only fruit produced in quantities attaining commercial importance. Peaches are raised in limited quantity, and in some instances of fine quality, but as a rule the crops are uncertain, and frequently destroyed by late frosts. Some of the interior sections are more favorable, but difficulty of reaching markets has restricted planting. Plums, table prunes, and cherries do well; in fact, small fruits grow to perfection. Crops mature late—strawberries never until May.

Old apple orchards, planted from thirty to forty years ago, set out without knowledge as to varieties adapted to soil and climate, naturally contain many that yield poor results, or are of limited market value. Among these may be mentioned White Winter Pearmain, Winesap, Rainbow, Golden Russet, Romanite, Newtown Pippin, and Gloria Mundi. The last named variety grows to perfection, and yields heavily, but is not always in demand. The Newtown Pippin has in some instances attained perfection in orchards removed from the coast area, but of late years has been almost invariably attacked by fungus (scab fungus), which constitutes a menace to several other varieties. Those varieties which have proved best adapted to local conditions are Rhode Island Greening, Bellflower, Baldwin, Gentian, Wagner, King, Jonathan, and Smith's Cider. Stark also shows up favorably, and Ben Davis, while not attaining proper color in coast sections, yields well throughout and has proved a good keeper.

Most orchards set out within the last ten years or so have proved very satisfying when given proper attention. We have one in mind, covering an area of about seven acres, which will this year yield fully two thousand boxes of merchantable stock, perfectly free from any infection. The principal varieties represented are Rhode Island Greening, Bellflower, Wagner, Stark, and Baldwin.

PESTS.—Notwithstanding the fact that many of the old orchards are quite small and have for many years constituted neglected attachments to dairy farms, this district has been but lightly affected with insect pests. Outside of the oyster-shell scale, the only threatening infection is the San José scale, and that is mostly confined to sections removed from the coast. There has been but one instance of codling moth.

With increased intercommunication and new settlements the San José scale became more prevalent in the warmer sections, naturally spreading from orchards where it had obtained an early foothold. With limited proceeds accruing to the growers at distant points, it was at first difficult to arouse proper attention, but gradually the importance of vigorous measures has become apparent, and is now followed with few exceptions by a ready response to instructions.

In order to provide more fully against local distribution by peddlers in remote sections and otherwise, this Board submitted the following ordinance, which was approved by the County Supervisors:

SECTION 1. Every person who shall sell, buy, expose for sale, give away, or distribute, to be used in the County of Humboldt, any fruit of any kind infested with codling moth or scale insects, their eggs or larvæ, or who shall import or bring same into the County of Humboldt, shall be guilty of a misdemeanor, and shall be punishable by a fine not exceeding fifty dollars, or by imprisonment not exceeding fifty days, or by both such fine and imprisonment.

SEC. 2. It shall be the duty of the County Board of Horticultural Commissioners, and of each member thereof, to investigate violations of this ordinance, and institute prosecutions therefor.

PREVENTIVE MEASURES.—The mixtures recommended by this Board (formulas submitted) are "carbolic soap wash spray," "lime, sulphur, and salt," "coal-oil emulsion," and "Bordeaux mixture."

The one mostly recommended for destroying the San José scale and the oyster-shell scale is "carbolic soap wash." It is virtually intended to supersede the "lime, sulphur, and salt" mixture, which in this climate of prolonged wet winters was found uncertain in results. The "carbolic soap wash" is applied in the spring and summer, directly attacking the developed larvæ, and in addition to destroying this, under proper treatment it will cure bark fungus, which is frequeutly noticeable here.

"Bordeaux mixture," although but little used so far, will probably have to be applied where scab gets the upper hand.

Woolly aphis is quite prevalent among the older orchards, and young trees do not escape it. There seems to be more disposition to overcome this pest than those for which successful remedies are known. While relief is frequently obtained, no formula has yet been applied here which insures absolute eradication.

QUARANTINE.—In the matter of quarantine, this Board has restricted itself to the appointment of one inspector at the Port of Eureka, where all fruit imported from other sections is landed. Each season more or less is condemned in the way of very early apples, pears, and quinces, and this season peaches have been included—principally on account of the peach worm. Consignees are granted privilege to return the condemned fruit, and in most cases it is sent back to shippers at San Francisco, from whence it is all received.

Owing to the familiarity of the Commissioners with the condition of orchards in their several districts, district inspectors are not maintained. During the season the Commissioners themselves make occasional special visits to those sections requiring attention.

CROPS.—Crops, as a rule, are fairly regular. The weather conditions rarely cause what may be termed a failure. Increased production from new orchards coming into bearing will continue for several years, and while new settings have not been large of late, they will constitute a gain over what may be discarded and dug up. This district is remarkably free from dangerous pests, and it shall be the aim of this Board still further to restrict destructive infections. Even under existing conditions a point has been reached according Humboldt apples a pronounced reputation for their clean condition. This implies absolute freedom from codling moth, and, with the other advantages that experience affords, may well bring this district to the front rank of apple-producing sections.

Respectfully submitted.

G. E. STEWART,
D. D. AVERILL,
J. E. JANSSEN,
Commissioners.

EUREKA, October 15, 1900.

KINGS COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The County Board of Horticultural Commissioners of Kings County beg leave to report: That the fruit industry of the county has never been more flourishing than in the present season, the crops of all kinds being good, and the markets also reasonably good. The vineyards are free from pests and diseases, and the orchards in the main healthy. The prune orchards are also healthy, with the exception of a few trees in several localities which are affected by the disease known as "dieback," the branches dying back from the end of the limb, often for several feet. The cause of this disease is not yet known.

The codling moth has seriously affected the apple crop, and this season it has been worse than usual. There is no parasite for this insect here; its life habit gives it perfect protection. While spraying was done more thoroughly than ever before, the apple crop has shown considerable infection. This may possibly have been due to impure materials sold us, but the work was thoroughly done.

The yellow mite has done serious injury to some of the prune orchards. We think we have learned that this insect is viviparous and passes the winter in the pupa or perfect state. If we are correct this mite can be checked effectually by the use of lime, sulphur, and salt wash. The spraying should be done in the spring, just before the leaves put out.

B. V. SHARP, President.
N. W. MOTHERAL, Secretary.

LASSEN COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: We beg to submit a short report of the condition of our orchards for the year 1900, and briefly the result of the efforts made to destroy the San José scale for the year 1899, this being the first year of the organization of a County Board of Horticulture in Lassen County. The San José scale was so strongly fastened upon the orchards in Susanville and immediate vicinity, that it seemed as if they would have to be destroyed in order to get rid of this pest; but the lime, sulphur, and salt remedy was so thoroughly used, under the direction of the chairman of this board, Mr. I. N. Jones, that now scarcely a vestige of the San José scale can be found.

We have some woolly aphis, for which the caustic soda and rosin wash has been found helpful, but the most difficult pest we have to handle is the codling moth. While doubtless the spraying of the trees at the right time with a solution of two hundred gallons of water to one pound of Paris green is helpful, still we have so many wormy apples this year that the value of our apple crop is so greatly lessened that unless some means can be found to destroy this pest, the growing of apples will not be a profitable industry. We have noticed here that when hogs are allowed the run of the orchards, the apples are much less wormy, and think it would be a good idea to keep as many for that purpose as could be profitably sustained in an orchard.

I. N. JONES, President.
G. W. MEYLERT, Secretary.

JANESVILLE, September 29, 1900.

LOS ANGELES COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: We herewith submit our annual report. We have just closed our third dry year, the rainfall being below the average. The hay and grain crop was much better throughout the county than last year. The alfalfa acreage was much larger than ever before.

There has been great activity in the development of water, principally by wells, in both the foothills and lowlands, and the result is that all crops will be about the average. The oranges and lemons, where properly taken care of, will be of good size and quality, and the trees that have been fumigated will have much the heaviest crop. There has been a large acreage of old seedling orange and lemon trees cut back and budded to Navels.

Apricots were plentiful and brought a good price. Peaches were rather small on account of the dry year. Prunes were small, but the trees were heavily loaded. Olive trees bore a very light crop, and unless thoroughly watered, fumigated, and cultivated, were almost an entire failure. The pear blight has been very bad this season, there being few orchards that have not been affected. The apple trees are loaded, and, where properly sprayed with lime, sulphur, and salt, the San José scale is well under control. The codling moth and shot-hole fungus are very bad, except where Paris green and the Bordeaux mixture have been used, and then the results have been entirely satisfactory. There has been a larger acreage sprayed this year than ever before.

There has been a healthy demand for citrus nursery stock the past season, and a fair acreage of deciduous trees set. The stock of both citrus and deciduous trees will be limited this winter and a good price will be received for first-class trees. Owing to the scarcity of deciduous nursery stock an effort will be made to import stock from the Eastern States, and great care must be taken that no infected trees be brought into the State.

Fumigation has proven a boon to the orchardist. Citrus orchards that three years ago were badly infested with black scale and not paying are to-day practically clean and on a paying basis, the direct result of thorough fumigation. There have been over one million citrus trees fumigated in this county during the past two seasons, and the outlook this year is for more good work in this line than ever before. An orchardist who fumigates, irrigates, fertilizes, and cultivates is sure of a good return for his labor, and we think that fumigation will soon solve the problem of the San José scale on deciduous trees.

The purple scale is the most serious pest that we have to contend with at the present time. The experiments tried with hydrocyanic acid gas, where two applications have been made, are more satisfactory than we expected. The red scale yields readily to one application, and we see no reason why the orchards of Los Angeles County should not be kept clean if the policy of the present Board of Commissioners is carried out. The commission has abandoned the plan of the county doing the fumigation, and has sold its fumigation outfit. The fumigation is now done by contract with private parties.

In November, 1898, the Board of Supervisors of Los Angeles County sent a man to the Hawaiian Islands in search of beneficial insects to prey upon our insect pests. During his researches of several months we received colonies of the *Chilocorus circumdatus* and *Sticheletis punctata,* parasites for the purple scale; *Orcus chalybeus,* for the red scale; *Coccinella repanta* and *Platyemus lividigaster,* for plant lice; *Cryptolæmus montrouzieri,* for the mealy bug. For a few weeks they could be found on the trees where they were placed, but now they have nearly all disappeared. Whether birds have killed them or climatic conditions have caused their death we are not sure. They were placed in the most favorable locations and given all the chance they could have, the instructions in regard to distribution having been followed out. The results have been far from satisfactory, and we fear that fumigation is the only hope for the orchardist. The only parasite that has been entirely satisfactory is the *Vedalia cardinalis,* the parasite for the white scale, which we keep on hand for distribution at all times.

In spite of the drought the outlook for Los Angeles County is bright, and if we have good rains this winter the orchardists will have nothing to complain of.

Respectfully submitted.

EDWARD H. RUST,
Secretary Los Angeles County Board
of Horticultural Commissioners.

LOS ANGELES, September 29, 1899.

LOS ANGELES COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: We herewith submit our annual report. We have just passed through our fourth dry year, the rainfall being below the average. The development of water has been even greater than last year, and the results have been very satisfactory. The best results have been obtained by digging and boring wells, the pumps being operated by steam and electricity.

The barley and wheat hay crop is short, being about one half what it should have been. The price ranges from $12 to $14 a ton. The crop of alfalfa hay was very good where it had proper irrigation, the price ranging from $8 to $11 a ton.

The outlook for the orange crop is good, the fruit being unusually large for this time of year. The returns from lemons the past season are greater than ever before. The budding of old seedling orchards continues.

The apricot crop was the best of the deciduous fruits and averaged about three quarters of a crop. The prune, peach, and pear trees blossomed very late, and in consequence that crop was almost an entire failure. The crop of olives was very light and we think it will never be better until there is more irrigation, fertilization, and fumigation practiced.

The vineyards have suffered severely by the drought, and the crop of grapes is correspondingly light.

The apple crop is very good on the damp lands, and where the trees have been properly sprayed with lime, sulphur, and salt, the San José scale is under control. The results obtained from the use of Paris green and Bordeaux mixture for codling moth and shot-hole fungus, respectively, are far from satisfactory, and although the Paris green was also tested as to purity, and in some cases was applied four times thirty days apart, a large percentage of the apples are wormy and the fungus is appearing badly in the last few weeks. There is more interest than ever displayed in the extermination of these pests.

The pear blight has appeared in several districts, but is not as bad as it was last season.

The red spider is doing considerable damage to citrus trees. It is being held in check by the use of the formula furnished by your Board and by the use of cold water sprayed upon the trees.

There has been a fair acreage of citrus trees set during the past season, considering the dry weather, and the prospect is that all first-class citrus nursery stock will be used this next year. The shortage of deciduous stock will increase the danger of infested trees being brought here from the East. Last spring we received four shipments of Eastern peach trees infested with black aphis, and burned about six thousand of these trees.

The number of trees fumigated this season will pass all our expectations, as there are at this time eleven hundred tents at work every night, and we estimate that there will be about a million and a quarter trees fumigated. It is now considered just as important to fumigate as it is to cultivate and fertilize, and the results are very satisfactory.

The nurserymen have coöperated with us in the eradicating of insect pests, and recently there have been fifteen acres of citrus nursery stock sprayed.

The purple scale is held in check by fumigation. The red scale is generally eradicated, except in some of the worst cases. The black scale, when treated at the proper time, is almost completely destroyed.

The only entirely successful parasite received thus far is the *Vedalia cardinalis*. The parasites, *Novius koebelei* and *Novius bellus*, received from your office, have been placed in infested trees, and we hope for good results. The *Rhizobius ventralis* have increased rapidly, but do not eradicate the black scale.

We have had twelve thousand five hundred old and infested citrus trees taken out during the past year. This work will have to be continued, as the drought has caused many trees to be neglected and left without care.

The Mexican steamers have been met at San Pedro, as per your instructions, and all plants and fruits carefully inspected. We fear that the Mexican orange worm may be introduced into this country from oranges brought by tourists and thrown from the trains when found wormy.

In spite of the continued drought, the outlook for the coming season is better than we could have expected.

Respectfully submitted.

EDWARD H. RUST,
Secretary Los Angeles County Board
of Horticultural Commissioners.

LOS ANGELES, September 29, 1900.

MADERA COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The year 1900 has been one of great activity in the fruit interest in this county. Large numbers of trees and vines were planted, and all seem to be doing finely. This stock was nearly all examined by one or more of the members of the County Board. Some trees and vines, however, were brought into our county and planted before we were appointed.

We have been comparatively free from ravages of insect pests, except from the destructive *Diabrotica*, which appeared in large quantities in some localities. We applied Paris green in the proportion of one pound of Paris green to two hundred gallons of water. Where these insects appeared in large quantities they destroyed the foliage of peach, apricot, and sometimes umbrella trees. They remained in destructive quantities for about six weeks, after which they gradually disappeared. Some of our farmers claimed that they were very destructive on the first and second crops of alfalfa, destroying the blossoms. So far, we have been unable to find out how these bugs multiply, where they lay their eggs, and at what time of the year the majority of the young appear. We are of the opinion that some poisonous spray might be successfully used in the spring or winter and destroy many of the young.

The red spider made its appearance in a few places, and we advised the use of the formula given in your bulletin on page 9. We distributed the literature that your honorable body sent us, and we have heard many kind words from the growers in appreciation of the same.

It has been rather difficult in quarantining and examining all of the plants, bulbs, vines, trees, and fruits that come into our county, on account of not being able to know when the same arrives. We have asked the depot agents and the express agent to notify us of the arrival of the same, but they have not always done so.

The fruit crop was above the average in all departments, and of most excellent quality. Late frosts did some damage to grapes, but still the crop was good.

C. M. PETTY,
Secretary.

MADERA, November 2, 1900.

ORANGE COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The progress of horticulture in this county during the year has been greater than during any previous year. Many trees of inferior varieties of fruit have been uprooted, and better varieties have been planted in their places, and much new ground has also been planted.

Much effective fumigation with hydrocyanic acid gas has sensibly decimated the red scale (*Aspidiotus aurantii*), but has not exterminated it. The black scale has largely increased during the year. This is due, doubtless, to the unseasonableness of the insecticide's application. The best time in this county for destroying black scale is September, October, and November, as they are during those months unprotected by the armor with which they cover themselves later on. The purple scale (*Mytilaspis citricola*), having found a lodgment in a few places in this county, yields to no treatment but fire.

The methods of executing the horticultural law against delinquents in Orange County may be different from what they are in other counties, but have worked smoothly and well. The law has often been enforced, but since the organization of the county, ten years ago, no loss has been sustained by it. The several county attorneys have so discharged their duties in connection with the Boards of Commissioners and Supervisors as to avoid litigation, friction, and loss.

Each Commissioner has a section of the county for his district, and is his own inspector. On the last Friday of each month the three meet at the county seat and report the work done the past month and take orders for the month to come. It has never been necessary in Orange County to enforce the law against a resident fruit-grower, except in cases where the land has been so heavily mortgaged that the real owner was out of sight. No grower in this county has ever been so shortsighted as to resist so wholesome and useful a law as the horticultural.

No Supervisor could be easily elected from any district in this county who has not a high appreciation of the value of the fruit industry, and probably no county of the same area has so large a percentage of first-class fruit land.

HIRAM HAMILTON,
I. N. RAFFERTY,
L. Z. HUNTINGTON,
Commissioners.

ORANGE, December, 1899.

ORANGE COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The chief horticultural industry of Orange County is the culture of oranges, citrons, lemons, pomelos, etc. During the season of 1899–1900 the output of this fruit was over 1,000 carloads, while the shipments from Southern California were between 18,000 and 19,000 carloads. The acreage of this fruit in this county is constantly increasing, and the crop output is increasing faster than the acreage. The quality of the fruit is also rapidly improving; better varieties are coming into bearing, the old seedling trees being removed or budded into better varieties.

We are making progress in fighting the scale pests that were introduced by the carelessness and inexperience of the early fruit-growers of this county. The pests that infest our citrus trees are the black scale (*Lecanium oleæ*), the red scale (*Aspidiotus citricola*), and the white scale (*Icerya purchasi*). The last is easily held in check by the *Vedalia cardinalis*, so that we count it a pest no longer; but the first two require a constant fight to so hold them down as to make citrus culture possible. Perfect eradication of neither from any grove has ever been effected without destroying the trees. The most effective method yet found for fighting these pests is the use of hydrocyanic acid gas, generated during the night under a tent covering the tree. The "gassing" process used in this county is done for the most part by seven firms, who furnish tents, chemicals, and labor, and are paid for the same by the fruit-growers themselves. A few tents are furnished by the county, by which the trees are fumigated by the Commissioners, when the disinfection is enforced by law, at the expense of the owners of the trees. During last season 168,000 trees were fumigated, at an expense to the growers of $38,500, and during the present season a larger number of trees will be fumigated, at a cost of quite $40,000.

Some eighteen or twenty packing-houses at the several depots of the county give employment to a large number of men, women, and children in picking and packing the citrus and other fruits of this county.

Walnut-growing is prospectively the leading industry of the county. A large acreage of trees is just coming into bearing. Last season furnished 100 carloads, worth 10 cents per pound, and the present season will overreach that. The walnut scale (*Aspidiotus juglans regia*) has not yet reached here, and it is the determination of the Horticultural Commissioners that it shall not, if the closest quarantine will prevent it.

The apricot tree is well adapted to the soil and climate of Orange County, and the acreage, although not large, is increasing. Enemies of the apricot have not yet put in an appearance.

HIRAM HAMILTON,
I. N. RAFFERTY,
L. Z. HUNTINGTON,
Commissioners.

ORANGE, December 5, 1900.

PLACER COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: I submit the following report for the last twelve months. In visiting orchards and gardens throughout my district, attention was first directed to making an examination of those orchards which were found the year previously to have been unclean; that is, more or less infested with scale. Those orchards which are yearly sprayed are clean.

There is found generally a voluntary desire to continue the spraying of the salt, lime, and sulphur solution in winter.

The codling moth is still a source of much annoyance in the older apple areas which lie scattered throughout the county, but by diligent spraying of Paris green this pest is becoming less prevalent.

The woolly aphis on apple trees is another pest we are trying to eradicate; it has a strong hold on some old trees as yet. On some nursery apple stock this pest has been found in considerable numbers, so much so as to require the destruction thereof.

The San José scale is not so general a pest as formerly, and will, with persistent care, be wiped out of the county. The soft brown scale is more or less found upon the orange; in many instances, the owners do not know of its existence until shown them.

The olive is becoming a very important crop in the county; but this season, owing to adverse weather at the time of bloom, the crop of fruit is very light.

The fruit industry is steadily increasing in acreage planted. The past two seasons have proven profitable to the grower. We have in this county remarkably fertile land for all orchard purposes, which is attested by such an extensive acreage devoted to fruit-raising.

J. R. CROSS,
President of Horticultural Commission.

AUBURN, October 4, 1900.

RIVERSIDE COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The Board of Horticultural Commissioners of the County of Riverside herewith submit their annual report for the year 1899, as provided for by law.

The County of Riverside, by reason of its peculiar geographical situation and topography, and its great variety of soil and climate, has a special adaptation to the pursuit of horticulture that few sections of this State and Nation possess. In the organization of the county, June 5, 1893, the choicest fruit-growing sections of San Bernardino and San Diego counties were taken to form the new county, as if by design of the promoters it should be one in which horticulture would be the first of all interests. That such is the case is amply proven by the world-wide reputation of the colony of Riverside for orange-growing and the fact that Riverside is the wealthiest city per capita in the Union.

Besides the enormous product of oranges and other citrus fruits, the county has one of the greatest variety of deciduous products, embracing every fruit known to the temperate zone and the tropics, with communities of especial adaptation of soil and climate for each variety.

Beginning with Palm Springs, on the margin of the Colorado Desert, the most easterly of our fruit colonies, we have an almost tropical climate, where frosts are unknown and where the earliest of fruits and vegetables are grown. The reputation of this community is local, although its product has frequently found remunerative markets in the far north.

Banning, a few miles westward, together with the sister colony of Beaumont, are situated in the San Gorgonio Pass, the great gateway to the paradise of Santa Ana Valley and the coast country. Here is produced in profusion and certainty of crop probably the greatest variety of our deciduous products. The apple, pear, quince, plum, and especially prune, almond, and apricot, find a perfect soil and climate, each with its own peculiar requisite of conditions.

Riverside, "the greatest orange-producing city in the world": As this apparently extravagant claim has been so frequently substantiated, it would seem needless to mention in corroboration that the product in oranges, for the past five years only, aggregates 5,117,700 boxes, or 17,059 cars, which would make a solid train one hundred and fifty-eight miles long.

Corona is a comparatively new colony; its trees are not of that age which produce the heaviest crop, but it is rapidly coming to the front as a producer of lemons. It is one of the closest planted communities in the State; there is scarcely a ten-acre space not set in orchard. It is delightfully situated as to perspective, as well as in happy conditions of soil, climate, and water supply.

Elsinore, situated on the borders of the famous lake of that name, together with the other colonies in the same basin, enjoys the distinctive advantages of a rich and deep alluvial soil, with the protection of the surrounding mountains from the hot and cold winds. Apple, apricot, pear, and prune are the chief products, and in each variety the quality is unsurpassed.

The great San Jacinto plain, embracing the colonies of San Jacinto, Hemet, Valle Vista, Winchester, Perris, Alessandro, Moreno, and others each of which has horticulture as its chief industry, has the widest scope of conditions for the pursuit thereof, as exemplified by the displays made and the prizes taken in local and State fairs.

The several commissions that have served from time to time in the County of Riverside, profiting by the experience, the friendly advice, and coöperation of each preceding commission, have made progress in system and efficiency. With ample funds provided by a Board of Supervisors always favorable to the service when economy and efficiency were combined, and having the staunchest support of the majority of the fruit-growers, the work of the commission has been pleasant and we trust and believe of great value to the horticultural interests. The organization, together with the rules governing the conduct of the commission, will be briefly given herein.

The present commission was organized January 3, 1899, with the following personnel: R. P. Cundiff of Riverside, chairman, H. H. Holmes of Corona, and W. F. Budlong of Perris, secretary. The county was divided into three districts, with a commissioner in charge of each district, who subdivided his district into divisions, according to the needs and facilities of the service, an inspector being appointed to take charge of the work of inspection in each of these subdivisions. Inspectors are required to make plats in duplicate of each infested orchard inspected, showing exact location of each infested tree. One copy thereof is filed in the office of the commissioners. Each inspector is authorized to supervise and required to report all work of eradication performed in his division.

A specific sum was agreed upon as the maximum expenditure for the year, not to exceed the amount of revenue derived from the tax upon trees and vines. This estimate was divided between the three districts in proportion to the assessed valuation of trees and vines in each district. A portion was set aside for routine work (commissioners' and inspectors' salaries), and a portion for the purchase of supplies; and a revolving fund constituted for the expenditures and receipts on chemical accounts and accounts created under the laws providing for recovery of accounts by liens.

The commission purchases and sells to the consumer at cost all chemicals used in fumigation, and nearly all the compounds for tree-wash, thereby insuring standard quality and uniformity of results.

The method of the commission is to cause, once each year, a careful inspection and vigorous treatment of territory in which the most serious infection exists. To inspect and cause to be treated if necessary, once in two years, those orchards only lightly infested; and every three years to cause inspection of territory not known to be infested. The work of eradication is always performed as soon after inspection as possible.

The commission for the past three years has made especial effort to enforce the quarantine laws. All shipments of trees, vines, shrubs, and green fruits, both imported and exported, have received the closest attention, and by reason of this vigilance the importation of many consignments of dangerously infested stock has been prevented. The primary rules governing this work are:

1. No infected fruit shall be removed from place where grown until thoroughly disinfected and cleaned. The cleaning must be done in the orchard and not in the packing-house.

2. No infected fruit shall be sold or offered for sale. Peddlers and other fruit-dealers may expect to have their stock confiscated if found infected.

3. Nurserymen or others buying or selling trees, vines, or plants must have the stock inspected, and each consignment must be accompanied by an inspector's certificate of cleanliness. Railway agents and others receiving consignments without certificates will immediately, on receipt of the same, notify the local inspector of the fact and hold the same subject to his orders.

4. The managers of packing-houses will be required to disinfect or cause to be disinfected all boxes coming from infected orchards.

Information as to infected orchards will be furnished upon application to the local inspector or the commissioner in charge. We suggest that the growers, for self-protection, allow no ladders, sacks, or boxes that have been in infected orchards to be used on their places.

The result of the vigorous application of this system in the first year's work was a material check; in the second year, a marked decrease; and in the past year, an absolute control of the ravages of insect pests.

The success of the past three years is best demonstrated by taking a number of orchards (sixty-six) selected indiscriminately as to location, class, or severity of infection, and comparing the record of infection for the successive years:

Twenty-eight orchards which in 1897 had a total infection of 1,609, had in 1899 only 433, or a reduction of $73\frac{1}{12}$ per cent.

Thirty-eight orchards which in 1898 had a total infection of 2,134, had in 1899 only 633, or a total reduction of $70\frac{4}{5}$ per cent.

The average reduction for the term was $75\frac{1}{2}$ per cent.

The commission has employed an average of eleven inspectors a month, who have in the past year inspected 9,326 acres, in a total of 2,424 days, or an average of 18½ days per month per man, and each about 3⅚ acres per day. They have found 7,907 trees infested with five varieties of injurious insects, and have supervised the treatment given 11,769 trees for insect pests.

The Commissioners have, in pursuance of their duties, been employed 366 days, within the eight months of their term, or an average of 15$\frac{8}{10}$ days each per month.

The assessed valuation of trees and vines in Riverside County for the year 1899 was $846,849, or 7.08 per cent of the total valuation of all property in the county. With the assessed valuation of various properties steadily decreasing for the past three years, the valuation of trees and vines has increased $234,723 over the year 1897, and $140,407 over the year 1898.

Respectfully submitted.

W. F. BUDLONG,
Secretary Riverside County Board of
Horticultural Commissioners.

RIVERSIDE, October 1, 1899.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The Horticultural Commissioners of the County of Riverside submit herewith their report for the year 1900.

The horticultural interests of Riverside County for the past year have, despite the drought and consequent scarcity of water, developed in the same ratio as in former years.

Citrus orchards have produced abundantly, and the quality of the product is unequaled. The total shipments of citrus fruits of the county for the season, to the date of this report, has been 5,433 cars.

Deciduous orchards, situated for the greater portion in parts of the county not having a full water-supply, suffered considerably from drought. Nevertheless, the crop was fair, especially apricots, which were of first quality. The estimated product was 320 cars.

The outlook for the coming citrus crop is very flattering, and promises to greatly exceed that of the past year.

The work of the commission has been the prosecution of the regular routine of inspection, and much time has been devoted to perfecting the system for the enforcement of the quarantine laws. In this work the commission has been greatly encouraged and assisted by the coöperation of the Association of Horticultural Commissioners of Southern California.

In the routine of inspection the commission has employed an average of twelve inspectors per month since date of last report, for a total of 3,005 days, inspecting 13,839 acres. For the same term the work of eradication of insect pests has consisted of the fumigation of 5,882 trees, the spraying of 4,058 trees, and colonizing with parasitic insects 226 trees.

The commission looks forward to the coming year with confidence and gratification, for with the late development of water and the stimulus given the industry by the past two prosperous years, the future is bright indeed.

Respectfully submitted.

W. F. BUDLONG,
Secretary Riverside County Board of
Horticultural Commissioners.

RIVERSIDE, October 1, 1900.

SACRAMENTO COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: We herewith present to you our annual report, as County Horticultural Commissioners of Sacramento County.

We were appointed commissioners by the Supervisors June 18, 1898. Having been appointed so late in the season, we had nothing of note to report to you last year.

We employ five inspectors, one serving in the city and four in the country. Our appropriation from the county does not permit us to keep the inspectors employed the year through. The inspector in the city is ready for duty at any time, the inspectors in the county serving four months in the spring, during spraying season.

We find but little pernicious scale, but the brown apricot scale has made its appearance in different parts of the county, the growers not being aware of it until their attention is called to it. The orange trees in the city show some red scale. The red spider is quite plentiful on the almond. The peach moth was much in evidence this spring in the orchards that were not sprayed with the winter wash of lime, sulphur, and salt. The vine-hopper has also made its appearance in some vineyards.

With a few exceptions, we have had but little trouble with the growers in regard to spraying; however, those having but a few trees do not want to be put to the expense of buying an outfit. Inspector Currier of Folsom bought an outfit, and for a small sum per tree did the spraying of small orchards, by which means he saved trouble. One other method we advised was to make arrangements with some one party to do all this odd spraying, making it an object to the party doing the work and a saving to the owners of small lots of trees.

The codling moth is the worst pest we have to contend with, and the surest means of exterminating it is through the marketing of the fruit, for when the buyer refuses to buy the grower must spray or lose crop. This year there were frequent complaints of poor Paris green, Secretary Lelong pronouncing a good portion of that which we had tested to be of poor quality.

Taking the orchards of the county as a whole, we find them in good condition as to scale, but feeling the effects of our dry seasons, where they have not been irrigated.

This has been a good fruit year, all varieties yielding a fair crop, and peaches a most abundant one, in fact too much so, as a large percentage of the fruit was under size.

Take it all in all, we think the grower has had a good season with fair prices.

It has been a favorable year for the vineyards, up to within a week; being a cool season, grapes burned less, but ripened slower. At the present writing reports are coming in that the last week of hot weather has burned the grapes all over the county.

Respectfully submitted.

WM. JOHNSTON,
GEO. H. CUTTER,
F. M. GRIMSHAW,
Commissioners.

SACRAMENTO, September 25, 1899.

To the Honorable the State Board of Horticulture:

GENTLEMEN: In making our annual report, we would state that we have pursued about the same course as during the previous season. We made two changes in our five inspectors employed.

We find that the orchardist who makes a living by growing fruit requires no urging to keep his orchard free from scale, but where you find a person with an orchard, a grain field, and a hop yard, and trying to run them all under one management, you will more than likely find evidence of neglect, on account of overwork.

The only scale that seems to be on the increase, in fact about the only scale that we have on deciduous trees, is the brown apricot scale. We are now convinced, after due trial and attention, that the lime, sulphur, and salt wash, well applied in the spring as late as possible, has proven an effectual remedy. As other parts of the State have been so successful in the use of the internal parasite *Comys fusca,* we endeavored this last spring to secure a few colonies, but applied too late, as they had about all hatched. We believe that in securing beneficial insects and placing them where most needed, the commission can be of the most benefit to the grower.

During the spring and summer considerable damage was done to fruit and green truck by the *Diabrotica trivitata.*

Complaint was made to the Board from Sacramento shippers that the inspector at Seattle, Washington, had unjustly condemned several carloads of fruit. If the fruit was really infested, a few such lessons would be the means of making the growers realize that wormy fruit will not be tolerated in an outside market.

The canneries report that the pears were, as a rule, more wormy this year than usual.

As to the fruit crop for this season, peaches were very light, excepting the later varieties. Of pears and plums there was a full crop. There was a good crop of prunes, but small in size. Grapes, about one half of a yield, selling at $20 per ton.

Respectfully submitted.

WM. JOHNSTON,
F. M. GRIMSHAW,
GEO. H. CUTTER,
Commissioners.

SACRAMENTO, October 26, 1900.

SAN BERNARDINO COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The Board of Horticultural Commissioners of the County of San Bernardino, State of California, herewith submit their report for the year of 1899, as provided by law.

The outlook for a successful year for the orchardists of this county was never as dark as at the beginning of this season, and yet at the present writing it bids fair to be one of if not the best year in our history. This was brought about in the main by the free expenditure of money in the development of water. There has been developed in this county in the last year an amount approximating 3,550 inches of water, to be used in the irrigation of orchards, and this, added to the supply of our mountain streams, has made as much or more water than we have had in the past. Thus, the outlook for the years to come has been very much brightened, for this amount of recently developed water, added to the old supply, puts the orchardists practically out of the control of all water companies, who have shown a disposition in the past, in a great many instances, to bear down on the orchard owners to the limit.

We have been reaping in the last year the fruits of the seed sown at the time when there was no commission in our county. When the Horticultural Commissioners throughout the State were legislated out of office two years ago, it was just at the height of our planting season and there was a great deal of nursery stock coming in, and of course, as there were no Commissioners in any of the counties, this condition of affairs was at once taken advantage of by a few disreputable nurserymen, who seized upon the opportunity to work off a portion of their old nursery stock, and, as we said before, the scale imported at that time has just begun to make its presence felt.

We have found a great deal of red scale on ornamental stock and shrubs; this was widely distributed throughout heretofore clean districts; of course, all such stock was at once attended to, and a sharp lookout will be kept on the surrounding orchards in these particular districts.

We feel proud of the work done by our board in the matter of the eradication of the red scale (*Aspidiotus aurantii*). It has been said by some very good authorities that once red scale, always red scale. We have found it very different, for we at one time, two years ago, had it in four different localities; and to-day we have it in but one of those four localities, and in that one, where last year we treated several hundred trees, this year all that were found infested were two, and these but slightly, which means, practically, extermination. So much for thorough work and systematic fumigation.

In the case of the yellow scale (*Aspidiotus citrinus*), we found it expedient, after close inspection of orchards in other counties where the parasite (*Coccophagus citrinus*) has been at work, to go and do likewise, as we think that all money spent in the gasing of this scale in the future is money wasted. As a result of this conclusion, last month we introduced some of the *Coccophagus* into our orchards and are resting on our oars with it to await future development.

With the black scale (*Lecanium oleæ*) we do not find any parasite at work to any extent; but owing to last year's drought and the great heat which came at their hatching season, as well as the amount of work done in the way of gasing the worst orchards in the last two years, we have not found it necessary to start our gasing outfits this year, as there was not enough scale to do any harm.

The *Vedalia cardinalis* continues to give perfect satisfaction in the way of exterminating the white scale.

None of the purple scale (*Mytilaspis citricola*) has yet made its appearance in this county, and we hope to keep it out.

We are troubled to no great extent with any of the other insects. We feel that we have the scale practically under our control, and we believe that if nothing out of the ordinary happens, we can keep it so.

Respectfully submitted.

ROBERT. BOSWORTH,
ROBERT. T. CURTIS,
J. S. FRINK,
Commissioners.

SAN BERNARDINO, November, 1899.

SAN BERNARDINO COUNTY.

To the Honorable the State Board of Horticulture:

Gentlemen: We, the members of the Board of Horticultural Commissioners of San Bernardino County, California, beg leave to report the following for the year ending the 30th day of November, 1900.

This has been another very dry year with us, but owing to the development of much water and the extra care with which it was used we find our orchards at this time in the very finest condition possible, with an abundant crop of large and very fine fruit.

Early in the year we found there was not going to be enough orange nursery stock in our county to supply the demand, so we had to issue an order making it possible for stock to be brought in from other counties or localities. This order was to the effect that if any trees were shipped in from a locality infested with red scale the trees had to be first fumigated, and then dipped in a solution of whale-oil soap and kerosene, mixed with warm water. There were several thousand trees shipped in that had to be treated this way, and although the treatment might seem harsh to some, we find that the trees thus treated seem to do as well as others, and we have not been able to find a live scale on any of them after they were planted.

We have rid ourselves completely of red scale (*Aspidiotus aurantii*) by careful work and much expense, but we feel that the work of inspection has been well done, and we have demonstrated beyond the shadow of a doubt that where we put a tent over a tree and fumigate it for red scale, that tree in the future will be found clean.

We find the *Coccophagus citrinus*, or the parasite for the yellow scale (*Aspidiotus citrinus*), doing good work; in fact, wherever the scale is found there you will find the parasite. We have found the *Rhizobius toowomba* working in great numbers on the *Aspidiotus rapax*, and we also find that they serve to keep the scale in check, and believe that they will exterminate it in time.

With the black scale (*Lecanium oleæ*) we have the main part of our trouble and expense, for in the last gasing season, which is now just ending, we have used about $5,000 worth of cyanide of potassium, and this is only about half the cost of the work. This expense falls directly on the orchardists, and if a true parasite could be found for this scale it would be of almost inestimable value to the orchardists of this county. As it now is, there will never be an end to the work of fumigation in this county, for we cannot possibly get over the whole infested district in one year. Unless this were possible, we can never hope to rid ourselves of this pest, for when we clean one strip of country and cannot clean that adjoining it the same year, by the next season the clean strip is again infested. With the *Icerya purchasi*, or white scale, we have but little trouble, further than the placing of the *Vedalia cardinalis*, as this parasite holds the scale in check completely, and we now suffer no loss from its ravages.

Respectfully submitted.

ROBERT BOSWORTH,
ROBERT T. CURTIS,
J. S. FRINK,
Commissioners.

SAN BERNARDINO, November 24, 1900.

SANTA BARBARA COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: We have the honor of submitting our annual report of the condition of the fruit interests of Santa Barbara County for the year ending September 30, 1899.

The condition of crops, as compared with the same last year at close of September, shows a great diminution as to size, quantity, and quality of fruit. This result is due, in our opinion, to the long succession of light winter rains, and the severe frosts of last winter; and in some localities, we must add the high winds through the spring.

The apple crop of Lompoc will be perhaps three fifths to three fourths that of 1898; in Santa Maria still less; while in the southern end of the county it is almost a failure. Other deciduous fruits give a less yield than the apple, with perhaps the exception of walnuts; these are promising at the present date. The prices for all the above-named fruits are above the average.

Citrus fruits were abundant during the spring and summer, but have fallen off through August and September. The condition of trees and vines, as affected by lack of moisture, is very noticeable. Their growth has been greatly curtailed and shows a very much weakened appearance, giving a small amount of wood for next year's supply. We predicted this state of things a year ago, from the fact of light rains for three or four years; yet we feel thankful that we have had much continuous cloudy weather a great part of the summer, and thereby our trees have maintained their verdure remarkably well.

Our fruit trees of all kinds have withstood the attacks of pests beyond expectation; for a cloudy season is favorable to the increase of injurious insects, fungoids, smut, and blemishes, while beneficial insects, such as ladybirds and chalcid flies, are delayed in their propagation. This is well shown in the citrus trees and very strongly in the olive groves. The latter will be almost an entire failure in crop this year.

The olive trees bloomed profusely in the spring; the blossoms remained on an unusually long time, but dropped without setting much fruit. This was probably due to the amount of rain last winter being sufficient to start the trees into bloom; but the subsoil not being well soaked soon absorbed the moisture, leaving the soil too dry to develop the fruit. It is estimated that the Fithian Ranch will produce 45 tons of olives this year, which is far below the average crop. Those that are too small for pickles will be pressed for oil. The ranch of Mrs. McCurdy-Hart, as regards olives, is somewhat similar to the Fithian, but the crop will be considerably less. Mr. Ellwood Cooper estimates his crop of olives at one fourth the usual amount. From all other parts of the county reports show an almost entire failure of olives. The varieties grown are very largely Mission, with an interspersion of Queen, Pleureur de Grosse, Broad-Leaved Mission, Manzanilla, and Sevillano Gordal.

The *Rhizobiids* have been plentiful during the summer and through September, and their work in eradicating scale insects has been very satisfactory in most cases. Spraying of trees has been continued by those who believe in that process, and a few growers for the first time have experimented with fumigation, but the result has been very unsatisfactory. The orchards that have been colonized with *Rhizobiids* and other parasitic insects have, as a rule, been in a better condition than those treated with spray or gas. This commission has been favored, through the kindness of Mr. Alexander Craw, State Quarantine Officer at San Francisco, with several importations of new parasites for destroying our insect pests and obtained from the Hawaiian Islands. These are the *Chilocorus circumdatus*, for the purple scale; the *Coleophera bi-plagiata*, for the aphides; and the new chalcid fly, a voracious and close feeder on the larvæ of the black scale.

The popularity of all our beneficial insects is shown by the multitude of applications for them from the fruit-growers, not only in our county, but outside as well. But our home demand is so great that we have allowed only two or three colonies to go abroad.

This commission is pleased to be able to report that the present appearance of the fruit industry of this county is far better than the most sanguine could predict last spring.

Respectfully submitted.

C. D. DORRIS,
C. J. RUSSELL,
T. N. SNOW,
Commissioners.

SANTA BARBARA, September 29, 1899.

SANTA BARBARA COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: We beg leave to submit our report, as the Santa Barbara County Board of Horticultural Commissioners, for the year ending September 30, 1900.

The closing quarter of 1899 gave a better showing of walnuts and apples than was previously expected. Of the former, there were about 148 tons, and prices were fair. The apple production was, as usual, confined principally to Lompoc and Santa Maria valleys—very largely to the former. Lompoc Valley, which really includes the small valley of Santa Rita, shipped about 23,000 boxes of this most perfect fruit, which has secured for this region an enviable reputation.

As the season closed the fruit-growers were able to see quite large bank accounts to their credit. Following the same line of fruits this year, we find a decrease in the walnut production, as at present estimated, although the quality is good, and prices have been fixed at 10 cents and 8 cents per pound for first and second grades, respectively.

The apple crop is increased; the estimate in the Lompoc Valley being set at more than 30,000 boxes; some putting the amount at nearly 40,000 boxes.

Santa Maria will make a fair showing in late fruits, but the late frosts of last spring and lack of rain caused very light crops of early fruits.

In Santa Barbara district, aside from walnuts, already spoken of, lemons form the great staple of shipments. The crop has been heavy, and prices have ruled high through the summer. From four to eight carloads per week have been sent out; besides, many thousand boxes have gone by steamer.

The grape crop has been the lightest for many years—less than half the average amount. Lack of rain is the cause of this decline.

The insect kingdom is still the great factor in computing the success of fruit-growing, the two great armies confronting each other being the *injurious* and the *beneficial*. Neither will ever be exterminated.

We are happy to report the excellent work of the *ventralis* and other *Rhizobiids* on both citrus and deciduous trees; keeping in check the black on the former, and the San José scale on the latter. Never has there been a year when they were so numerous in the first four months from New Year's day. This was probably due to the mild weather at that time.

We are sorry to report that the red scale (*Aspidiotus aurantii*) has been on the increase, really to a serious extent, as the steel-blue ladybirds (*Orcus chalybeus*) have mostly fallen a prey to the birds. A few remain, and we hope to have them reinforced at an early day.

We are also obliged to report a few orchards infested with Florida purple scale (*Mytilaspis citricola*), and probably at the present time fumigation alone will keep this pest in check.

The codling moth is still with us, although the great apple district—Lompoc—is comparatively clean; scarcely a specimen is to be found there.

The woolly aphis is quite scarce, as most of the infested trees have been dug up and burned.

Fruit-growers take a commendable interest in caring for their trees and fruit, realizing that it is for their profit to do so.

In the Lompoc Valley, the San José scale has been somewhat troublesome, and as the sea breeze is very strong through that region, Commissioner C. D. Dorris of that district has for two years been experimenting for the destruction of the San José scale, and reports the following method a success: His plan now is to have *two spraying outfits;* and then, selecting an infested orchard, one of the teams sprays each infected tree with pure "Star" kerosene oil until every part of the bark is saturated; then passes on to the next. The second team follows immediately, say in five or six minutes, with a solution of one pound of "Merry War" concentrated lye to five gallons of water, and sprays the first tree, and then follows the first team from tree to tree. The oil penetrates every living thing, as well as the eggs of all insect life, and would in a short time evaporate, causing the bark to dry and crack, and thus would injure and perhaps destroy the tree; but the lye quickly unites with the oil, neutralizes the injurious effect thereof, and the combination actually *nourishes the tree.* This spraying is done in midwinter, while the trees are dormant and denuded of their leaves. Orchards thus treated last winter were three weeks earlier in leafing out in the spring, and throughout the season kept in advance of those *not* sprayed; and the fruit this fall is larger, fairer, and will command a higher price. One orchardist went so far as to spray one side of a row of trees, leaving the other untouched, and the great difference was easily seen by passers-by. This Board on September 22d performed the same experiment upon a lemon tree infested with Florida purple scale, after cutting back the branches to about three feet, and topping it, leaving a few leaves, twigs, and lemons to work upon. The time has been too short for us to report on this case, but it is to be hoped that it will prove successful.

Respectfully submitted.

C. D. DORRIS,
C. J. RUSSELL,
T. N. SNOW,
Commissioners.

SANTA BARBARA, October 1, 1900.

SANTA CLARA COUNTY.

To the Honorable the State Board of Horticulture:

Gentlemen: I have the honor to submit for your kind consideration my report as County Entomologist for the year. The Supervisors of my county saw fit to appoint me under Section 25, Subdivision 26, of the County Government Act, under the title of County Entomologist. I have worked under the rules and regulations of the State law, although not Horticultural Commissioner.

The very dry seasons have caused great suffering to the horticultural and viticultural industries of this county, and vast amounts of money have been spent for irrigation. The crops in general were short, excepting the prune crop, of which we had the largest crop the county ever had, the quality of which, though, was very inferior to that of previous years.

During the planting season a great deal of nursery stock was shipped into the county from other counties in the State, and several lots were shipped in from Eastern States, Oregon, France, and Japan. This stock was carefully inspected and several lots were thoroughly fumigated.

A large area has been planted to various fruits, and despite the drought, these young trees are looking very well.

The pests which are most prevalent to-day in the county are the black scale (*Lecanium oleæ*), the peach-root borer (*Sanninoidea opalescens*), and the grape louse (*Phylloxera vastatrix*). The first named pest has increased materially, and my belief is that it is owing to the extreme drought which has prevailed. This drought seems to be detrimental to the increase of ladybirds, as a great many colonies have been distributed in various sections but no material increase of them has been noted. The peach-root borer has been vigorously fought, but as there is a continuous brood from April until October, it has proven a great task to find a suitable remedy to cope with the pest. The best preventive which has been successfully used is paper, which is put on in March after carefully worming the trees, and acts as a complete barrier for the season. Our vineyards are more or less attacked by the phylloxera, and it is only a matter of a few years when most of the vineyards will be replanted to resistant vines.

A few of our common pests, such as cankerworms, cutworms, grasshoppers, etc., have given a little trouble at times, but without serious results.

Of the fungi, we are troubled with pear-leaf blight, shot-hole fungus, root-knot, and prune-leaf fungus, and these are kept in check by applications of Bordeaux wash.

On June 13th I received a shipment of chalcid flies from the Department of Agriculture of Cape Colony, South Africa, which was forwarded to me by our Department of Agriculture at Washington, D. C. The parasites (*Aphycus cyanea*) arrived in very good condition, and colonies have been placed in several favorable localities. A check was kept on the parasites under cover, and up to date two broods were reared. I have also observed one brood out of doors in the trees where some of the original colonies were placed. This chalcid fly practically keeps the black scale in check in South Africa, and from material received from there, its work resembles that of our *Comys fusca*, the parasite of the brown apricot scale.

Respectfully submitted.

EDW. M. EHRHORN,
County Entomologist.

SAN JOSÉ, October 25, 1900.

SANTA CRUZ COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The present Board of Santa Cruz County Horticultural Commissioners herewith make their first annual report.

The Board of Horticultural Commissioners of Santa Cruz County, consisting of C. H. Rodgers, H. R. Dakin, and H. B. Pilkington, was appointed on December 4, 1899. Their first meeting was held December 27, 1899, when C. H. Rodgers was elected president and H. R. Dakin secretary. At this meeting it was decided to have printed a list of the most approved formulas for sprays, with instructions, to be mailed to the orchardists of the county, that they might be reached in time for some work to be done during the winter, with the result that much interest was awakened, and more spraying was done than in any previous winter.

Upon looking over the field immediately after appointment we found that we have almost every pest known to deciduous trees. Those doing the most damage are codling moth and San José scale. The codling moth has been more than usually active the latter end of this season, taking twenty-five to forty per cent of the crop. The San José scale is just becoming a menace in the leading orchard districts, but where it has been thoroughly treated with lime, salt, and sulphur wash, it has been almost eradicated, virtually so for the time being. The owner of any orchard in which San José scale has been found will be notified to thoroughly spray his trees.

The work of the Commissioners receives the hearty support of nearly every orchardist in the county. In Watsonville, the leading apple center, an orchardist's association has been formed in which the members have pledged themselves to eradicate the insect pests in their own orchard and encourage others to do likewise; also, to give every aid to the Commissioners in their work. The only opposition met by the Board was from the Slavonian packers of Watsonville, when in May last it was decided to inspect the packing-houses. The Slavonian packers objected, and in some instances the inspectors were obliged to force an entrance. As a result of the investigation, it was decided that the packers should be instructed to clean the empty boxes of codling moth cocoons after the season's work each year.

The apple crop, which is the leading fruit crop of the county, is the largest ever produced, and the quality very fine.

All other fruit crops are good, except peaches and grapes, which are light.

The Board now being fully prepared, we hope the following year to accomplish a very beneficial work in this county.

Respectfully submitted.

H. R. DAKIN,
Secretary.

SANTA CRUZ, October 1, 1900.

SAN DIEGO COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: We herewith submit our report as Horticultural Commissioners of San Diego County.

We are treating but few of our orchards for injurious insects, as compared with the work of former years. With the exceptions of the purple scale, codling moth, and yellow mite, we are depending largely on the work of beneficial insects, and are generally well satisfied with their work. Some few orchardists are not willing to wait for the beneficial insects to clean out their orchards, therefore spraying and fumigating are still in practice to some extent for the *Lecaniums*. In most cases we think this method of fighting scale is as detrimental to the owners of orchards as though we turned our herds and flocks onto our wheat fields.

Although the year has been discouraging to many, owing to the lack of natural rainfall, to others it has been a successful year. Apricots were above an average crop, with a better market than in former years; peaches, about one fourth of a crop; prunes, sixty per cent; pears, forty per cent; grapes, seventy-five per cent, and small. Our orange crop amounted to seventy-five per cent of a normal crop, of fair quality. The lemon output was the largest of any former shipment, amounting to 518 cars, and the quality second to none. Prices ruled high during the entire summer season, and most growers are having a prosperous year.

The citrus orchards are being carried over these dry seasons in good condition. Many of them are well provided with fruit, especially so with the orange; although they may mature small, the crop promises to be above the average.

The mountain apple crop is very light this year, being not more than twenty-five per cent of an average crop. The trees made a splendid start, bloomed profusely, and an abundance of fruit set, to be dropped by a frost on the 16th of April, then another on the 29th of the same month. We do not consider this all loss, for the trees during the summer have prepared nicely for next year's crop.

Cherries suffered the same as did the apples, and the crop was very light.

The olive crop will be light, owing, we believe, to the two past dry seasons. Most of our olive trees are planted on our driest soils, and the natural rainfall has not been sufficient the past two years to induce them to produce fruit. Olive trees that are located on deep, rich land where water is available, or trees that have been irrigated, are producing this year splendid crops of olives, and we believe the olive question of San Diego County is a question of soil and water.

We are now fighting the Russian thistle; it appears to have been brought here in alfalfa seed imported to this State from Colorado. The Russian thistle is found in all of the alfalfa fields that were planted during the spring of 1899 where Colorado seed was sown. We have and will continue to publish the facts in regard to this foreigner to assist our farmers in procuring clean seed.

All ships from foreign countries entering the port of San Diego are carefully inspected on their arrival by Quarantine Officer G. P. Hall.

Respectfully submitted.

F. AUSTIN,
Secretary.

ESCONDIDO, October 9, 1899.

To the Honorable the State Board of Horticulture:

GENTLEMEN: The County Board of Horticultural Commissioners of San Diego County herewith submits its annual report.

The season just past has been one of scant rainfall, causing a comparatively small plant growth. But few new orchards have been planted since our last report.

Great activity along the line of developing water has proven quite successful in most parts of the county, furnishing ample water to save the citrus orchards from destruction. Notwithstanding the scanty rainfall for the past six years, we have in many instances succeeded in developing large volumes of water. Citrus orchards in such favored locations have been profitable the past year, and the leading question now before our fruit-growers is how to procure more water.

Deciduous fruit trees have recovered almost fully from their spring and summer setback, caused, we believe, from irregular climatic conditions, such as summer weather during the months of January and February, then changing to cooler weather and remaining dry, causing swollen buds, both fruit and leaf, to drop in many cases. Our peach trees, which made splendid preparation during the summer of 1899 for a fruit crop, did not bloom during the spring of 1900, and our trees in many instances were devoid of foliage as late as the first of July, and then developed a growth from the trunk and base of the larger branches. Stone fruits proved a failure, except a sprinkling of apricots, cherries, and Kelsey plums.

Grapes have stood the dry seasons remarkably well, and the future outlook is good for the industry. Raisin grapes will yield from fifty to sixty per cent of normal; wine and table grapes, ninety per cent.

Growers of small fruits have found the season to be a profitable one, especially so with those having abundance of water for irrigation.

The mountain apple crop will not reach above fifteen per cent of the normal yield. This is due to a climatic combination of rain, snow, sleet, and wind storms that took place immediately after the bloom appeared, washing away the pollen, so we believe.

Deciduous nursery trees imported to this county from Fort Scott, Kansas, on inspection were found to be infested with the peach-root borer (*Sannina exitiosa*). All trees found to contain borers were destroyed, and the others dipped in whale-oil soap solution in the proportion of one-half pound of soap to one gallon of water, at a temperature from 115° to 130° Fahrenheit, remaining therein for three minutes, then held in quarantine eight days, reinspected and released. Apple trees of the same lot were found to be infested with woolly aphis. The roots were washed and dipped in the whale-oil soap solution, as were the peach roots, then held in quarantine subject to return whence they came. Later they were burned by order of the owner.

The orchard pests are controlled, as in former years, by beneficial insects, insecticides, and fumigation. The beneficial insects take care of the olive trees. Fumigation is considered to be the best means of eradicating the *Lecaniums* from our large citrus trees, while spraying is found to be the most economical for eradicating them on small trees.

The purple scale (*Mytilaspis citricola*) is handled by spraying and fumigation, and it is quite generally conceded that the frequent application of insecticides proves to be more effectual than fumigation, notwithstanding the fact that orchards are fumigated twice a year. By frequent applications of insecticides is meant to spray at intervals of from fifteen to twenty days during the summer months, as the young are most numerous during the warm weather.

The San José scale (*Aspidiotus perniciosus*) is almost a thing of the past. Mites of all kinds are handled quite successfully by dusting the plants with powdered sulphur.

Respectfully submitted.

F. AUSTIN,
Secretary.

ESCONDIDO, September 24, 1900.

STANISLAUS COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: We, the County Horticultural Commissioners, beg to submit our annual report.

During the year we have inspected about 150 shipments of trees and plants coming into the county, consisting of about 50,000 trees. Of this number about 1,000 were rejected, and either returned or destroyed. We also visited 192 different orchards, with a total of about 140,000 trees. Many of the older orchards we found to be infested with scale and other injurious insects, which were effectually destroyed by spraying and by being consumed by the *Vedalia cardinalis.*

The codling moth has been more common than for many years past, consequently those who have not sprayed, or have sprayed only once, have but few good apples or pears, while those who have repeatedly sprayed with Paris green find their orchards almost entirely free from the moth or worm. The use of the lime, sulphur, and salt spray for the pernicious scale during the past winter produced good results, the trees being clean and in a healthy condition, also free from moss.

We find that the following varieties of fruit trees grow well and are quite prolific bearers in this county, namely: Apricot, peach, olive, almond, pear, and the apple, if on roots resistant to the woolly aphis. The orange and cherry also do well in the foothills. Nearly all varieties of grapes produce well in the county with the exception of some of the Muscat varieties, which fail to set on the bunch, due to some blight.

The reason that spraying with Paris green for codling moth is not more successful is due to the fact that a poor quality of Paris green is used, also that the spray is not used often enough. A sample of the Paris green to be used should be sent to the State University for test, because to use a poor grade of the poison is worse than to use none at all, for it not only does no good but is expensive and tends to discourage the use of the greatest preventive of codling moth known.

Shot-hole fungus has done great damage to the apricot crop throughout the State. Only those who sprayed with lime, sulphur, and salt in winter, and the Bordeaux mixture after the fruit set, are free from the fungus. Apricots thus treated brought from $5 to $10 more per ton than the ones pitted with the fungus.

The fruit crop for this season will be large.

A. E. CLARY,
W. F. WHEELER,
A. L. RUTHERFORD,
Commissioners.

MODESTO, July 7, 1900.

TEHAMA COUNTY.

To the Honorable the State Board of Horticulture.

GENTLEMEN: We beg leave to submit the following report:

The fruit industry of this county has greatly improved within the past year. Crops have been heavy and of good quality and our fruit men have been prosperous. Our orchardists are generally wide awake to their interests, so very little trouble is experienced in having orchards sprayed when spraying is required.

We have the pernicious scale in some twenty-five orchards in this county, but where the lime, sulphur, and salt remedy has been used properly the pest has been greatly reduced. The codling moth gained on us this year, owing to the very unfavorable spring for spraying with the Paris green remedy; still this pest is well in hand and our orchardists are a unit in fighting it. We have the yellow mite to contend with, but it is easy to hold in check when the dry sulphur remedy is applied in time. This is a good remedy for this part of the State. The peach moth gave us very little trouble the past season.

On the whole, we can say that the prospects for Tehama County are very encouraging, and with proper care the insect pests may be kept well in hand.

Respectfully submitted.

DOUGLAS S. CONE,
President.

RED BLUFF, November 24, 1900.

TULARE COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: Herewith we submit for your consideration our report as County Horticultural Commissioners for Tulare County.

It gives us pleasure to report that this has been a very prosperous season for the fruit-growers in this county, the crops of all kinds of deciduous fruits being heavy, and as the season was most favorable, the growers were enabled to harvest their entire crop without any loss.

Our prune crop has been quite heavy, of a very fine quality, and the increase of production has been from a few cars three years ago to four hundred cars this season. Our peach-growing industry has also kept pace with the prunes, and we shipped from Visalia alone to the Eastern market this season, at a fair profit to the growers, two hundred cars of green fruit.

Our citrus orchards at Orosi, Antelope Heights, Lemon Cove, Exeter, Lindsay, and Porterville are looking fine, although on account of the heavy frost the past winter the output will not be any larger than the past season. There will be about two hundred cars of oranges and forty cars of lemons shipped from these parts this season.

Olives have not been planted very extensively as yet, although what have been planted are doing remarkably well, some of which will produce this season one ton to the acre at four years old.

The San José scale is now almost a thing of the past, having been destroyed by parasites. This scale is now only to be found along the public highways where the dust settles on the trees, and in which the scale will thrive and the parasites will not.

The brown apricot scale got to be a serious problem with us a year ago, but with the assistance of the *Coccophagus*, the *Comys fusca*, and the twice-stabbed ladybird (*Chilocorus bivulnerus*) we have gotten the upper hand of this destructive insect, and it will soon be a thing of the past.

We colonized in the various orchards this season over a million of the *Comys fusca* and forty thousand of the twice-stabbed ladybird. This ladybird seems to be of more benefit as a scale or aphis destroyer than either of the other parasites.

The only scale we have found so far in our citrus orchards is the cottony cushion scale, which is kept down and will soon be entirely destroyed by the *Vedalia cardinalis*.

Our raisin crop has been fair and of excellent quality, especially in the northern part of the county around Orosi, Dinuba, and Traver, and on account of the raisin combine at Fresno, the price for raisins this season has been good, making the grape industry this season very profitable to the grower.

Respectfully submitted.

C. M. HATCH,
J. T. BEARSS,
I. H. THOMAS,
Commissioners.

VISALIA, October 10, 1899.

To the Honorable the State Board of Horticulture:

GENTLEMEN: Herewith we submit for your consideration our annual report as Horticultural Commissioners for the County of Tulare.

The yield of deciduous fruits except prunes this season has been fully up to the average. Our peaches from some climatic cause were on an average not so large as usual, but still large enough for commercial purposes. The pear crop was unusually fine. Apricots, a very heavy crop, as were also nectarines and Prunus Simoni. Our prune crop was about half, the loss being caused by warm weather in March forcing out the bloom, and when the fruit was about the size of small shot the thermometer for two nights fell to 28°, congealing the sap in the small stem of the fruit, causing it to drop. The remainder of the crop was fine, grading to unusually large sizes, some going 20 to 30 to the pound.

Our citrus industry has advanced at a rapid rate during the past few years, and from a shipment last season of one hundred cars of oranges and lemons, it will reach this season one thousand carloads, our Navel oranges ripening so that they will most all be in the Eastern market by the middle of December.

The planting was not so heavy last spring, on account of the high price of trees, but arrangements are being made for extensive planting the coming season.

The black scale so far has not taken hold here, our atmosphere being so dry and warm that they perish the first season after being brought here on young trees.

The cottony cushion scale got a start here in some localities, but by the introduction of the *Vedalia cardinalis* we have been able to keep them in check, though not totally eradicating them. Our *Vedalia cardinalis* do good work until July and August, when they seem to perish, not being able to stand the heat of 106° to 110° in the shade. This necessitates having a breeding-house, so we can put in fall and early spring colonies, in order that the little friends of the citrus-growers can have cool weather to do their work in. Through the kindness of Mr. Alexander Craw, who sent us a colony each of *Novius ventralis* and *Vedalia cardinalis*, we are propagating them in jars and find the *Novius ventralis* to increase faster than the *Vedalia cardinalis*. How they will stand the heat of our climate we will not know until next season.

Our lemon orchards of the following varieties: Eureka, Lisbon, and Villa Franca, are producing as fine thin-skinned commercial lemons as the best imported, and are free of all scale and smut.

The codling moth here, as well as all over the State, is bad, and it requires vigilance with the growers of apples and pears to keep them down, and failures to do so frequently occur by getting adulterated Paris green. It seems to us that the State Board of Horticulture should, for the benefit of the fruit-growers, procure a registered brand of Paris green that would prevent them from being swindled with the adulterated article.

The worst scale we have to contend with now on our deciduous trees is the brown apricot scale, which is very bad in some sections of our county. Those who spray annually with the lime, sulphur, and salt keep them down, so that there is but little damage from them in their orchards. We have colonized a great many of the *Comys fusca* and the twice-stabbed ladybird, and hope that they will increase the coming season so as to eradicate this scale. We find that the *Coccophagus* is increasing very fast, and is doing good work in destroying this scale. The San José scale is about all gone from this county, though at one time it had spread to the trees in the forest.

Our vineyards are in good condition, and as yet have no diseases in them, and are producing very profitable crops, and the growers are much encouraged by the prices they are receiving through the instrumentality of the raisin combine, which is the best means of giving them a paying compensation for their labor. The effect of this encouragement to the vineyardist will be the planting of a large acreage in vines the coming season.

Respectfully submitted.

C. M. HATCH,
J. T. BEARSS,
I. H. THOMAS,
Commissioners.

VISALIA, October 10, 1900.

VENTURA COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: I have the honor to submit the annual report of the Board of Horticultural Commissioners of Ventura County.

All deciduous fruits in this county not under irrigating ditches have suffered from lack of moisture during the past three years. The orchards look well generally, but the crop of fruit has been growing smaller each year since the dry period commenced.

The apricot is the king of deciduous fruits in this county. It is not troubled with any pests except black scale, and this is only troublesome near the coast. The county contains about 200,000 apricot trees, most of them in full bearing, and in ordinary years they produce a profitable crop.

The prune comes next to the apricot in the number of trees, 140,000, and is probably the biggest mistake in the county. The trees are clean and free from pests, but they do not bear well, and many fine prune orchards have been grubbed out in the past few years.

The apple business is also going back, except in favored localities in the mountains. We have had little trouble to keep the trees free from pernicious scale, but the codling moth and woolly aphis have spread over the Santa Clara Valley and given so much trouble that some apple-growers have grubbed out their trees; the number remaining is about 40,000.

Peaches do well in this county, but most of the peach orchards are small, and heretofore the surplus fruit has been dried, but now a cannery has been started at Ventura and the business may improve. The trees are free from pests. At present the county contains about 25,000 trees.

Pears bear exceedingly heavy crops of excellent quality, and a few carloads of green fruit have been shipped to Eastern markets, but the returns were generally unsatisfactory. The codling moth will probably prevent the business from attaining very large proportions. The number of trees is now 7,000.

The olive has been planted quite extensively in every part of the county; the number of trees is over 100,000. Most of these trees have been planted on dry land that cannot be irrigated, and consequently are not very productive. The black scale has been very troublesome to olive trees within twenty miles of the coast. We introduced *Rhizobius ventralis* and scattered the ladybirds to every olive orchard we could find infested, and for a few years we thought the black scale was doomed; but recently the lace-wing fly has become very numerous. This fly seems to live entirely on the larvæ of the *Rhizobius*, and consequently the scale is increasing, and some olive-growers are spraying their trees with the distillate wash. This Board is very anxious to try some of the new internal parasites. We feel very confident that they are what we want, as the lace-wing larvæ cannot destroy them.

We have had very little work to keep down the scale on deciduous trees outside of the irrigated districts, as the drought did the work, and almost did the trees, too, in the last two years.

The Washington Navel orange has proven to be the most profitable tree grown in this county. Many orchards of Mediterranean Sweets and other varieties have been budded to Navels during the past few years. The principal citrus fruit districts are Matilija, irrigated from the Ventura River, and springs; Ojai, irrigated from small streams and springs on the north side of Ojai Valley; Santa Paula, irrigated from the Santa Paula and Santa Clara rivers; Sespe and Fillmore districts, irrigated from the Sespe River; Bardsdale, irrigated from the Santa Clara River; Piru, irrigated from the Piru River. The Sespe, Fillmore, and Santa Paula districts have had sufficient water to keep the trees in good condition and mature large, fine fruit; other districts were a little short of water, but have used all they had to the best advantage, and have done nearly as well. The Ojai and Piru districts are free from scale; Sespe, Bardsdale, and Fillmore have very little black scale; Santa Paula has considerable black scale and one case of purple scale. The purple scale has been fumigated; some growers are fumigating their black scale, and others are spraying with distillate wash. Several cases of red and purple scales have been found on single trees in different parts of the county; these trees were burned, and in every case the scale was exterminated.

Walnuts and almonds are grown extensively in various parts of the county. Outside of irrigated districts the nuts are rather small this year, on account of the drought. Some aphis has made its appearance on the walnuts, and clover mite on the almonds.

The importation of nursery stock has almost entirely ceased during the last three years, on account of the drought; but with good rains we expect to see a good demand for nursery stock, especially apricots and oranges.

W. I. RICE,
J. F. McINTYRE,
J. B. ALVORD,
Commissioners.

VENTURA, September 30, 1900.

YOLO COUNTY.

To the Honorable the State Board of Horticulture:

Gentlemen: I have the honor to submit herewith our annual report as Horticultural Commissioners of Yolo County for the year 1899.

Yolo County has three Horticultural Commissioners, and they have divided the county into three districts, each one looking especially after his own territory, although authorized to act anywhere within the county, if necessary.

We have visited all the orchards in the county, and thorough work has been done in eradicating all insect pests injurious to fruit trees. For the past three years some of the orchards of the county have been neglected, but I note with pleasure a greater interest manifested this season among the orchardists.

Many of our almond orchards along Putah Creek have suffered greatly from root-knot. As yet we have found no successful remedy.

A very small acreage has been planted to fruit during the present season. But this year has been especially good for all lines of fruit, and I believe a new impetus will be given to the planting of fruit trees best suited to this county.

The water supply cannot be excelled; it is sufficient to irrigate all the orchards and alfalfa lands of the county.

In the vicinity of Davisville in some of the almond orchards several large irrigating plants have been installed, and several others to follow. With an extension of the present plan of coöperative marketing of fruit, success is assured.

J. W. ANDERSON,
Secretary.

Davisville, October 20, 1899.

To the Honorable the State Board of Horticulture:

Gentlemen: I have the honor to submit herewith a partial report of the Board of Horticultural Commissioners of Yolo County for the year 1900.

A thorough canvass of the orchards of the county shows them to be in a very good condition. The various insect pests have been dealt with, and with the exception of the red spider, they have done but little damage to fruit trees.

This season has been a good one for the orchardist. Good crops and fair prices have prevailed, with a better future, as the marketing conditions have improved.

Some activity in tree-planting this winter is promised; the canning peach and the almond have the preference.

Wine grapes and raisins are doing better, and the output this season from this place is much larger than last.

The shipments of cattle, hogs, sheep, and grain from here this season have equaled that of any other, while the shipments of dried fruits and nuts have fallen off a little, but with the advent of electricity, cheap power, irrigation, and diversified farming we hope in a few years to double the output of this year.

Respectfully submitted.

J. W. ANDERSON,
Secretary.

DAVISVILLE, October 15, 1900.

YUBA COUNTY.

To the Honorable the State Board of Horticulture:

GENTLEMEN: I herewith beg to report to you briefly as to the condition of the fruit interests of Yuba County as regards insect pests.

There are three Horticultural Commissioners for this county, and they have divided the county into three districts, as follows: The northern, or Camptonville, district; the southern and eastern district, embracing Smartsville and Wheatland; and the central, or Marysville, district. The northern district has been allotted to Mr. W. B. Meek, who resides at Camptonville; the southern and eastern district has been allotted to Mr. John King, who resides at Wheatland; and the central district has been allotted to Mr. G. W. Harney, who resides at Marysville.

During the course of the year careful inspections of fruit orchards have been made by the Yuba County Horticultural Commissioners in their various districts, and no serious outbreak of insect pests has been reported. In the Marysville district, where for a long time the orange trees have been infested with the yellow scale, it has been found that owing to the introduction of the chalcid flies, the natural enemy of the said scale, the trees have been almost entirely rid of the pest and that they present a clean and thrifty appearance.

During the spring or shipping season for trees a strict quarantine and inspection are maintained in Marysville on all shipments of nursery stock arriving to be distributed through the County of Yuba.

During the past year a number of colonies of beneficial insects have been obtained from the State Board of Horticulture, to be placed on trees infested with the cottony cushion scale. The scale has not multiplied and the trees show but few specimens of the pest.

The fruit industry is in a progressive state in this county; each year shows some new plantings. Better methods and better appliances are constantly sought after by the fruit-grower; all seem to be keenly alert for the improvement of the industry.

Respectfully,

GEO. W. HARNEY,
Commissioner.

MARYSVILLE, October 1, 1900.

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